THE LANCET.

A Journal of British and Foreign Medicine, Surgery, Obstetrics, Physiology, Chemistry, Pharmacology, Public Health, and News.

TELEGRAPHIC ADDRESS—LANCET, WESTRAND LONDON TELEPHONE NUMBER—GERRARD 5356

No. XIX. OF VOL. I., 1913.
No. 4680. Vol. CLXXXIV. LONDON, SATURDAY, MAY 10, 1913. Pp. 160—Price 6d.

ROYAL SOCIETY OF MEDICINE.

1, WIMPOLE STREET.

For DIARY of MEETINGS see page 1360.

Now Ready. Royal 8vo. Pp. viii. + 816. With 6 Coloured Plates and 310 Illustrations. Price 21s. net.

THE PRACTICE of UROLOGY. A Surgical Treatise on Genito-Urinary Diseases, including Syphilis. By C. H. CHETWOOD, M.D., LL.D., Professor of Genito-Urinary Surgery, New York Polyclinic.
London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Pp. xxviii. + 1560. With 631 Illustrations, mostly Original and in Colours. Price 21s. net. Or in Two Volumes. Price, each 12s. 6d. net.

BUCHANAN'S MANUAL of ANATOMY, SYSTEMATIC and PRACTICAL, including EMBRYOLOGY.
"The outstanding merit of the book is its completeness. It is a very *multum in parvo*, and we can confidently recommend it to students and teachers."—ST. GEORGE'S HOSPITAL GAZETTE.
London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

Extracts from Reviews of
LATHAM and ENGLISH'S
SYSTEM OF TREATMENT.

THE LANCET.—"*The whole work does credit to the authors who have taken part in its compilation.*"
B.M.J.—"*Representative of the world's medical knowledge as a whole.*"
THE PRACTITIONER—"*Leaves with the reader a sense of satisfaction seldom surpassed.*"
EDIN. MED. JL.—"*Condensed, correct, practical, and well up to date.*"
MED. PRESS—"*Authors are in the very forefront of their own speciality.*"
THE MEDICAL TIMES.—"*There is no better guide to the treatment of disease in this or any other language.*"
THE MEDICAL RECORD.—"*Presents a lucid exposition of modern therapeutics by the authorities of the day.*"
Four Volumes. One Guinea net each.
200 Contributors. 1000 Illustrations. 5000 Pages.
Please write for Prospectus.
London: J. & A. Churchill, 7, Great Marlborough-street.

By W. SOLTAU FENWICK, M.D.

DYSPEPSIA.

Octavo, 485 pages. Illustrated. Cloth. 13s. net.

W. B. Saunders Company, 9, Henrietta-street, W.C.

NEW EDITION. In 2 vols. 45s. net.

DEFORMITIES, including DISEASES of the BONES and JOINTS. A Text-Book of Orthopædic Surgery. Illustrated by 70 Plates and over 1000 Figures, and by Notes of Cases. By A. H. TUBBY, M.S.Lond., F.R.C.S.Eng.
Second Edition: "The standard text-book in English on the subject." —THE LANCET.
First Edition: "Standard work on the subject in the English language."—BRITISH MEDICAL JOURNAL.
Macmillan & Co., Ltd., St. Martin-street, London, W.C.

Just Published. viii. + 280 pp. Price 5s. net.
With Original Photographs and 143 Special Prescriptions.

TREATMENT of DISEASES of the SKIN.

BY KNOWSLEY SIBLEY, M.D. (CAMB.).

London: Edward Arnold, 41 & 43, Maddox-street, W.

A NEW VOLUME JUST PUBLISHED.

THE JELLY METHOD of STAINING LIVING CELLS, and some Researches made with it, including Cancer Research, the *in vitro* Staining of Protozoa, and the Investigation of Intracellular Parasites and Inclusions found in Syphilis, Scarlet Fever, and Measles. A full description of the above will be found in the following volumes:—"INDUCED CELL-REPRODUCTION AND CANCER" (1910). 12s. net. "RESEARCHES INTO INDUCED CELL-REPRODUCTION AND CANCER, AND OTHER PAPERS." Vol I. (1911), Vol. II. (1912), each 3s. 6d. net; and Vol. III. (1913), just out, 5s. net. The Volumes are Illustrated by many Drawings, Photomicrographs, and Coloured Plates; and they contain papers by various authors.
THE JOHN HOWARD McFADDEN RESEARCHES.
Published by Mr. John Murray.

Just Published. Sixth Edition. Thoroughly Revised. 14 Plates and 175 Illustrations. 8vo, 12s. 6d. net; post free, 12s. 11d., abroad, 13s. 6d.

MEDICAL ELECTRICITY: A PRACTICAL HANDBOOK FOR STUDENTS AND PRACTITIONERS.
By H. LEWIS JONES, M.A., M.D., F.R.C.P., Consulting Medical Officer to the Electrical Department in St. Bartholomew's Hospital. [LEWIS'S PRACTICAL SERIES.
London: H. K. Lewis, 136, Gower-street, W.C.

LEWIS'S CIRCULATING LIBRARY.

READING ROOM FOR SUBSCRIBERS OPEN DAILY.
Annual Subscription, Town or Country, from One Guinea.
BUSINESS HOURS—9 A.M. to 6.30 P.M. CLOSED 1 P.M. SATURDAYS.
H. K. Lewis, Medical Publisher and Bookseller,
136, Gower-street and 24, Gower Place, London, W.C.

NOW IN PREPARATION.

NON-OPERATIVE TREATMENT OF ENLARGED PROSTATE WITH THE WAVE CURRENT.

By L. ELIOT CRESSY, M.R.C.S., L.R.C.P.

James Nisbet & Co., Berners-street, London.

By H. BELLAMY GARDNER, M.R.C.S.Eng.

SURGICAL ANÆSTHESIA.
With full instructions for the open ether method.
"A capital exposition of the principles and practice of anæsthesia."—THE LANCET. Messrs. Baillière, Tindall & Cox. Price 5s.

SECOND EDITION, with Illustrations, royal 8vo, 10s. 6d.

TREATMENT of LATERAL CURVATURE of the SPINE. By BERNARD ROTH, F.R.C.S.
"In speaking of the first edition we expressed the hope that this book would do something to check the unscientific and often disastrous treatment of lateral curvature of the spine by spinal supports and prolonged rest, and this new edition is even better calculated to show the good results which may be obtained in lateral curvature by posture and exercise."—THE LANCET.
"There can be no doubt that good work has been done by the author by his strong advocacy of the more rational method of treating lateral curvature of the spine by exercises."—BRITISH MEDICAL JOURNAL.
London: H. K. Lewis, 136, Gower-street, W.C.

"ROSE and CARLESS' SURGERY

is a trustworthy guide for the student and the practitioner."—LANCET.

Eighth Edition. Pp. xii. + 1406. With 12 coloured Plates and 581 Illustrations. Price 21s. net.

London: Baillière, Tindall & Cox, 8, Henrietta-street, Covent Garden.

THE CLINICAL PATHOLOGY of SYPHILIS AND PARASYPHILIS AND ITS VALUE FOR DIAGNOSIS AND CONTROLLING TREATMENT.
CONTAINING A CHAPTER ON TREATMENT.
By
HUGH WANSEY BAYLY,
M.A., M.R.C.S., L.R.C.P.,
Pathologist to the London Lock Hospitals; Clinical Pathologist to the National Hospital for the Paralysed and Epileptic, &c.
Three Plates and 22 Illustrations. Pp. xiv. + 194. Price 5s. net.
Baillière, Tindall & Cox.
"A compact and attractive volume which is easy to read and handy for reference, particularly suited to students and practitioners."
BRITISH MEDICAL JOURNAL, Nov. 2nd, 1912.
"We know of no book where both the theory and practice of the clinical pathology of syphilis have been more carefully discussed or more simply expressed."—LANCET, March 1st, 1913.
"We commend this eminently practical and readable book to anyone who wishes rapidly to acquire a knowledge of the recent important work on the diagnosis and treatment of syphilis."
—JOURNAL R.A.M.C., Nov., 1912.

ORIGINAL TECHNIQUE ONLY ADOPTED.

Send for Full Particulars to

WASSERMANN TEST

CONDUCTED AT THE REASONABLE
FEE of 15/-
RELIABLE REPORTS PROMPTLY DESPATCHED BY

THE WASSERMANN INSTITUTE,
SUTHERLAND HOUSE
3, LLOYDS AVENUE, LONDON, E.C.

ORIGINAL STANDARD REAGENTS
Controlled by PROF. DR. A. v. WASSERMANN
USED.

BULLOCK'S PEPSINA PORCI.

DOSE—2 to 4 GRAINS.

ACID GLYCERINE OF PEPSINE

DOSE 1 to 2 DRMS. **(BULLOCK).**

In this preparation advantage has been taken of the solubility of Pepsine in Glycerine to produce a convenient and desirable *liquid form* of this valuable medicine; whilst the preservative qualities of the menstruum confer upon the Acid Glycerine of Pepsine the property of keeping for any length of time.

May be prescribed with most substances compatible with Acids.
In 4-oz., 8-oz., and 16-oz. Bottles, and in Bulk.

The published experiments of G. F. DOWDESWELL, Esq., M.A.Cantab., F.C.S., F.L.S., &c., Dr. PAVY, Professor TUSON, the late Professor GARROD, Dr. ARNOLD LEES, and others, conclusively demonstrate the excellence, high digestive power, and medicinal value of the above preparations.

J. L. BULLOCK & CO., 3, Hanover St., Hanover Sq., London, W.

Valentine's Meat-Juice

For **Quieting** the **Irritable Stomach, Aiding Digestion** and **Sustaining** and **Strengthening, Valentine's Meat-Juice** is employed in **Hospital** and **Private Practice** in the treatment of

Diseases of Children.

Dr. Raphael Raimondi, *Consulting Physician of the Montmartre Nurseries, Paris, France:* "I use VALENTINE'S MEAT-JUICE with Nurslings eighteen months to two years old. These very Weak Babies derive great benefit from the use of this tonic preparation. I give it to Debilitated Infants, after they are eighteen months old, in doses of one teaspoonful in thirty gramms of boiled water twice a day, and to be continued for a month."

Dr. R. Hecker, *Lecturer on Diseases of Children; Chief Physician Gisela Hospital for Children, Munich, Germany:* "For years I have been using VALENTINE'S MEAT-JUICE in my practice and especially in treating cases of Debility among Children, to strengthen the patients and stimulate the appetite, and have always been much pleased with the results."

For Sale by European and American Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,
RICHMOND, VIRGINIA, U. S. A.

D 117

THE LANCET.

No. 4680. Vol. CLXXXIV. LONDON, SATURDAY, MAY 10, 1913. Pp. 160.

CONTENTS.

The whole of the literary matter in THE LANCET is copyright.

A **LECTURE** on the Physiology of the Open-air Treatment. Delivered at Brompton Hospital for Consumption and Diseases of the Chest on Friday, March 7th, 1913, by LEONARD HILL, M.B.Lond., F.R.S., Professor of Physiology, London Hospital Medical School.—(WITH COLOURED ILLUSTRATIONS).. 1225

ORIGINAL ARTICLES.

"Colds in the Head," and the Influence of Warm Confined Atmospheres on the Mucous Membrane of the Nose and Throat. By LEONARD HILL, M.B. Lond., F.R.S., Professor of Physiology, London Hospital Medical School; and FRANCIS F. MUECKE, M.B., B.S. Adelaide, F.R.C.S. Eng., Assistant Surgeon, London Throat Hospital, &c. —(WITH COLOURED ILLUSTRATIONS) 1291

Three Cases of Symmetrical Necrosis of the Cortex of the Kidneys Associated with Puerperal Eclampsia and Suppression of Urine. By ROBERT JARDINE, M.D. Edin., Professor of Midwifery, St. Mungo's College, Glasgow, &c.; and ALEX. MILLS KENNEDY, M.D. Glasg., Senior Assistant Pathologist to the Glasgow Royal Infirmary, &c.—(WITH COLOURED ILLUSTRATIONS).. 1291

Alimentary Toxæmia. By W. E. DIXON, F.R.S., M.A. Cantab., M.D., B.Sc.Lond., Professor of Materia Medica and Pharmacology, King's College, London. — (*Illustrated*) 1295

Chronic Intestinal Stasis. By C. H. FAGGE, M.S. Lond., F.R.C.S. Eng. 1298

Remarks on Abnormal Intra-abdominal Developmental Adhesions. By H. M. W. GRAY, M.B., C.M. Aberd., F.R.C.S. Edin., and WILLIAM ANDERSON, M.B., Ch.B. Aberd., F.R.C.S. Edin.—(*Illustrated*). — (*To be continued*) 1300

On the Prognostic Significance of Secondary Polycythæmia in Cardio-pulmonary Cases. By F. PARKES WEBER, M.D. Cantab., F.R.C.P. Lond..... 1307

Difficult Labour Caused by Fœtal Ascites. By S. GORDON LUKER, M.D. Cantab..... 1309

Man's Mental Evolution, Past and Future. By HARRY CAMPBELL, M.D., B.S. Lond., F.R.C.P. Lond. — II.—(*To be continued*)..... 1333

MEDICAL SOCIETIES.

ROYAL SOCIETY OF MEDICINE: SPECIAL MEETING OF FELLOWS:—Continued Discussion on Alimentary Toxæmia 1310

CLINICAL SECTION:—Exhibition of Clinical Cases.—Arsenic Cancer 1312

MEDICAL SOCIETY OF LONDON: Discussion on the Treatment of Arterio-sclerosis and High Tension 1313

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM: Annual Meetings 1315

ROYAL ACADEMY OF MEDICINE IN IRELAND: Return Cases of Scarlet Fever.—Method of Registering Hospital Cases..... 1317

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY: Exhibition of Cases..... 1318

LIVERPOOL MEDICAL INSTITUTION: Mediterranean Fever..... 1318

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY: Demonstration and Notes on the Functions of the Labyrinth and Cerebellum..... 1319

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND: Some Suggestions Respecting the Care of the Feeble-minded under the Mental Deficiency Bill, 1913..... 1319

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY: Exhibition of Specimens..... 1319

REVIEWS AND NOTICES OF BOOKS.

Vaccine Therapy: Its Theory and Practice. By R. W. Allen, M.D., B.S. Lond. Fourth edition..... 1320

A Clinical System of Tuberculosis. By Dr. B. Bandelier and Dr. O. Roepke..... 1320

Die Krankheiten der Nase und Mundhöhle sowie des Rachens und des Kehlkopfes. Von Dr. Alfred Bruck 1320

The Growth of Groups in the Animal Kingdom. By R. E. Lloyd, M.B., D.Sc.Lond..... 1321

Surgical Operations with Local Anæsthesia. By Arthur E. Hertzler, M.D..... 1321

The Treatment of Infantile Paralysis. By Oskar Vulpius, M.D..... 1321

Abriss der Unfall- und Invaliditätskunde des Sehappa-rats. By Dr. Ehrenfried Cramer 1322

The Sanitary Officer's Handbook of Practical Hygiene. By Lieut.-Col. W. W. O. Beveridge, D.S.O., R.A.M.C.; and Major C. F. Wanhill, R.A.M.C. Second edition... 1322

Atlas der Operations-Anatomie und Operations-Pathologie der Weiblichen Sexual Organen. By Dr. Wilhelm Liepmann 1322

A Treatise on Hygiene and Public Health, with Special Reference to the Tropics. By Birendra Nath Ghosh, L.M.S.Cal. Univ., and Jahar Lal Das, L.M.S. Cal. Univ.... 1323

Annals of Tropical Medicine and Parasitology..... 1323

Minor Maladies and their Treatment. By Leonard Williams, M.D. Glasg., &c. Third edition..... 1723

The Right of the Child to be Well Born. By G. E. Dawson, Ph.D..... 1324

Zeitschrift für die Gesamte Experimentelle Medizin..... 1324

Æsculape 1324

REPORTS AND ANALYTICAL RECORDS FROM THE LANCET LABORATORY.

(1) Hediosit; and (2) Amphotropin 1324

Perogen Bath..... 1325

"Enule" Rectal Suppositories 1325

Soluble Salts of Acetyl Salicylic Acid 1325

NEW INVENTIONS.

A Combined Tonsillotome and Tonsillectotome. — (*Illustrated*) 1325

Improved Tongue Forceps.—(*Illustrated*) 1326

LEADING ARTICLES.

FREUD'S THEORY OF DREAMS.. 1327

THE NEED FOR RESEARCH IN TUBERCULOSIS..... 1327

ANNOTATIONS.

A Legislative Classification of Potable Spirits 1329

Compulsory Cadet Training.... 1329

Physiology and the Cinematograph..... 1330

Forms of Mental Defect..... 1330

International Dental Congress, 1914..... 1331

X Rays in the Diagnosis of Pulmonary Tuberculosis..... 1331

The Marking of Plumbers' Work 1331

A Short Way with Anti-vaccinationists..... 1332

Ligneous Phlegmon of the Abdominal Wall..... 1332

Fatal Tobacco Poisoning..... 1332

PUBLIC HEALTH.

Annual Reports of Medical Officers of Health..... 1338

VITAL STATISTICS: Health of English Towns ... 1339

Health of Scotch Towns..... 1339

Health of Irish Towns..... 1339

SPECIAL ARTICLES.

King Edward's Hospital Fund for London..... 1326

Metropolitan Asylums Board.. 1335

The Final Report of the Royal Commission on University Education in London.—III. —(*To be continued*) 1336

The Seventeenth International Congress of Medicine (1913) 1337

Royal Medical Benevolent Fund 1337

The Services 1340

Liverpool 1347

Bristol and Western Counties 1348

Scotland 1348

Ireland 1349

Paris 1350

Berlin..... 1351

United States of America 1351

Notes from India 1352

THE NATIONAL INSURANCE ACT.

Medical Certificates under the National Insurance Act and a Friendly Society..... 1353

Somerset Insurance Committee..... 1353

Bristol Insurance Committee.. 1353

CORRESPONDENCE.

Research Defence Society (Sir David Gill and others).. 1342

When to Operate in Appendicitis (Mr. Frank Kidd)..... 1342

Alimentary Toxæmia (Dr. Alexander Haig, Dr. Sydney Whitaker)..... 1342

The Treatment of Arterio-sclerosis and High Tension (Dr. William P. S. Branson) 1343

Endemic Goitre: The Causative Factor (Dr. John Aulde) 1344

On the Incidence of Tuberculosis in Infants as Determined by the von Pirquet Test (Dr. Ralph Vincent and Dr. W. E. Robinson)..... 1345

Freud's Theory of Dreams (Mr. M. D. Eder) 1345

Treatment of Typhoid Fever by Tincture of Iodine (Dr. David Walsh) 1346

Intravenous Injections of Iodoform in Pulmonary Tuberculosis (Dr. Thomas W. Dewar)..... 1346

The late Mr. R. B. Etherington-Smith (Sir Anthony A. Bowlby and others) 1347

MEDICAL NEWS.

National Food Reform Association 1296

Royal Free Hospital..... 1319

Royal Sanitary Institute..... 1319

International Committee for Post-Graduate Medical Education 1328

Deaths of Eminent Foreign Medical Men 1332

Crownhill Convalescent Home 1332

Bristol Children's Hospital: Ladies' Auxiliary..... 1341

Leeds General Infirmary: Resignation of Mr. H. Littlewood..... 1341

Children's Convalescent Home, Weston-super-Mare.. 1352

Foreign University Intelligence..... 1354

Chemists' Exhibition..... 1354

Margate Chamber of Commerce 1354

University of London: King's College 1354

Brussels Medical Graduates' Association 1354

Royal Institute of Public Health 1354

University of London: Faculty of Medicine 1354

Torbay Hospital..... 1356

The Royal Society..... 1355

Royal Institution..... 1355

Presentation to a Medical Practitioner 1355

Durham University Medical Graduates' Association..... 1355

PARLIAMENTARY INTELLIGENCE.

Notes on Current Topics..... 1355

House of Commons 1355

Appointments 1357

Vacancies..... 1357

New Addresses 1358

Births, Marriages, and Deaths 1359

Books, &c., received 1359

Notes, Short Comments, and Answers to Correspondents 1359

Medical Diary 1360

Meteorological Readings..... 1361

Acknowledgments of Communications received..... 1361

FOR INDEX TO ADVERTISEMENTS SEE PAGES 2 & 4.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

ARNOLD:—
Sibley ..... Diseases of Skin. Cover i

BAILLIERE, TINDALL & COX:—
Bayly ..... Clinical Pathology of Syphilis, &c. .. Cover i
Buchanan .. Anatomy ..... Cover i
Chetwood .. Urology ..... Cover i
Dieulafoy .. Medicine 5
Freyer ..... Enlargement of the Prostate 7
" ..... Surgical Diseases of the Urinary Organs 7
Gardner .... Surgical Anæsthesia ..... Cover i
Harrison .... Care, &c., of European Children in Tropics .. 5
Jones ..... Psycho-Analysis 5
Kraepelin's Clinical Psychiatry 5
Lamb ..... Throat, Nose and Ear. 5
McKisack .. Dictionary of Medical Diagnosis 5
Minett ..... Diagnosis of Bacteria, &c. 5

Rose & Carless.... Surgery ..... Cover i
Schmieden .. Operative Surgery 5
Vulpius .... Infantile Paralysis 5
Williams.... Minor Maladies 5

CASSELL & CO.:—
Morris, Sir M. .... Diseases of the Skin .. 6

CHURCHILL, J. & A.:—
Craig..... Psychological Medicine 3
Edelmann .... Meat Hygiene 3
Eden ..... Midwifery 3
" ..... Gynæcology 3
Fox ..... Elementary Bacteriology, &c. 3
Jacobson & Rowlands. Operations of Surgery. 3
Latham & English a System of Treatment ..... Cover i
Lewis ..... Medical Vade-Mecum.. 3
Panton ..... Clinical Pathology 3
Stimson .... Fractures &c. 3
Taylor ..... Digestion & Metabolism 3
Thresh ..... Examination of Waters 3
Thorne, Ezely..... Schott Nauheim Treatment, &c., of the Heart 6
Turner & Stewart .. Nervous Diseases..... 3

CORNISH BROS.:—
Sawyer, Sir J. Contributions to Practical Medicine 7
" Vacomata 7
" Coprostasis 7
" Maladies of the Heart.. 7

GRIFFIN & CO.:—
West..... Organs of Respiration 7

LEWIS:—
Jones ..... Medical Electricity Cover i
Martindale & Westcott.. Extra Pharmacopœia.. 6
Roth ..... Lateral Curvature of the Spine ..... Cover i

MACMILLAN & CO.:—
Ballance .... Cerebral Decompression in Ordinary Practice.. 6
Tubby ..... Deformities .... Cover i

MEDICAL PUBLISHING CO.—
Lane ..... Operative Treatment of Fractures 7
" ..... Cleft Palate and Hare Lip 7

MURRAY:—
Jolly Method of Staining Living Cells Cover i

NISBET & CO.:—
Creasy ..... Non-operative Treatment of Enlarged Prostate ..... Cover
Lane ..... Treatment of Chronic Constipation 7

PULMAN & SONS:—
Elliot ..... Treatment of Glaucoma 6

SAUNDERS COMPANY:—
Fenwick .... Dyspepsia ..... Cover i

WRIGHT & SONS (Bristol):—
Laird..... Tuberculosis 6

MEDICAL LIBRARIES, &c.:—

Baker, Birmingham—Books..... 3
Bolton Stammering 4
Graphic Office—Pictures of the Year. 6
Kelley—Stammering 4
Lewis's Circulating Library .. Cover i
Lewis's Medical and Scientific Circulating Library 7
Matthews Bros.—
Wood's Application of Trusses .. 6
Pharmaceutical Press 6
Squire & Sons—
Squire's Companion ..... Cover iv
" London Hospitals. " iv

OFFICIAL AND GENERAL ANNOUNCEMENTS

APPOINTMENTS VACANT:—
Aberystwyth Infirmary, &c..... 68
Addington Hospital, Durban 70
Bexhill Hospital and Dispensary, Barnsley..... 70
Belgrave Hos. for Children, Clapham 71
Birkenhead Borough Hospital..... 67
Birkenhead Union 69
Birmingham and Midland Eye Hos. 69
Birmingham Union, Dudley-road Infirmary 70
Bolingbroke Hospital, Wandsworth Common 71
Brentford Union 71
Bridgwater Hospital 68
Bristol General Hospital 67
Bristol Royal Infirmary 68
Canterbury Borough Asylum 69
Chelsea Hospital for Women 68
Cheltenham General Hospital 70
Chesterfield & North Derbyshire Hospital 67
City of Bradford Education Committee 67
City of Liverpool—Park Hill Sanatorium 69
City of Sheffield Tuberculosis Dispensary 71
Cosham Memorial Hos., Ringwood. 68
County Asylum, Lancaster 69
County Asylum, Prestwich 68
County Asylum, Whittingham 67
County Borough of Ipswich 70
County Borough of West Ham 69
Coventry and Warwickshire Hospital. 71
Denbighshire Infirmary 68
Derbyshire Royal Infirmary 69
Devonshire Hospital, Buxton 67
Dumfries and Galloway Royal Infirmary 69
Earlswood Asylum, Redhill 70
East Suffolk Hospital, Ipswich 70
East Sussex Hospital, Hastings 66
Elder Dempster & Co., Liverpool 73
Evelina Hospital for Sick Children .. 70
Farringdon General Dispensary..... 68
French Hospital and Dispensary 69
Glasgow District Mental Hospital.... 69
Guy's Hospital Dental School 67
Ingham Infirmary and South Shields Dispensary 68
Jessop Hospital for Women, Sheffield. 69
King Edward VII.'s Hospital, Cardiff. 69
King Edward VII. Welsh National Memorial Association 67
King's College for Women..... 67
Lancashire County Asylum, Winwick 70
Lincoln Mental Hospital 66
Liverpool Eye and Ear Infirmary.... 70
London Hospital..... 70
Loughborough and District Gen. Hos. 69
McGill University, Montreal 68
Metropolitan Borough of Greenwich 71
Middlesex County Asylum, St. Albans 69
Newcastle-upon-Tyne Dispensary 71
North Staffordshire Infirmary, Stoke-on-Trent 68
Nottingham General Dispensary 66
Nottingham General Hospital..... 67
Paddington Green Children's Hosp.... 70
Parish of Liverpool Workhouse..... 68
Prince of Wales's General Hospital, Tottenham..... 71
Queen's Hospital, Birmingham 68
Rotherham Hospital and Dispensary. 66
Royal Albert Hospital, Devonport .. 68
Royal Berkshire Hospital, Reading .. 70
Royal Cornwall Infirmary, Truro 71
Royal Devon and Exeter Hospital .. 67
Royal Ear Hospital 69
Royal Hospital, Richmond, Surrey .. 71
Royal Infirmary, Sheffield..... 67

APPOINTMENTS—(Continued).
Royal Portsmouth Hospital 70
Royal South Hants and Southampton Hospital 69
Royal Sussex County Hospital 69
Royal Westminster Ophthalmic Hos.. 66
Rubery Hill Asylum, Birmingham .. 68
St. Paul's Hospital, Red Lion-square. 70
St. Peter's Hospital for Stone, &c. .. 70
Salisbury Infirmary 70
Schiff Home of Recovery, Cobham .. 70
Sheffield Royal Hospital..... 67
Somerset and Bath Asylum, Taunton 67
Southampton Free Eye Hospital 66
Surrey County Council 71
Victoria Univ sity of Manchester .. 68
Warneford, Leamington, &c., Hosp., Leamington Spa 67
Western General Dispensary, Marylebone-road 70
West Suffolk General Hospital, Bury St Edmunds 70
Wolverhampton and Staffordshire General Hospital 68
Worcestershire Asylum, Bromsgrove . 68

ASSISTANCIES, MEDICAL..... 71

ASYLUMS, HOMES, &c.—
Ashbrook Hall, St. Leonards-on-Sea.. 67
Ashwood House, Kingswinford 67
Association of Medical Men Receiving Resident Patients 66
Barnsley Hall, Bromsgrove 67
Barnwood House Hospital..... 68
Bishopstone House, Bedford..... 67
Bootham Park, York 67
Brunton House, Lancaster..... 66
Buntingford House Retreat, Buntingford 66
Camberwell House, Peckham-road.... 67
Cheadle Royal 66
Clarence Lodge, Clapham-park 66
Colthurst House, Warford..... 66
Coppice, The, Nottingham..... 68
Dadson Nursing Home 66
Dalrymple House, Rickmansworth .. 66
Dartmoor Sanatorium 66
David Lewis Colony, Alderley Edge.. 65
Dr. E. Rosenberg Sanatorium..... 62
Fraulein von Müller, W. Kensington. 66
Ghyllwoods 66
Grove House, Church Stretton 66
Grove, The, Catton, Norwich 66
Haydock Lodge, Newton-le-Willows.. 59
Haynes, Brentwood 66
Heigham Hall, Norwich..... 67
Hendon Grove, Hendon 67
Home for Epileptics, Maghull 65
Inverurith Lodge Sanatorium, Colinsburgh 59
Kingsdown House, Box 66
London Fever Hospital 58
Malling Place, Kent 58
Manna Mead, Hinchheath 66
Melbourne House, Leicester 66
Meyrick, Brighton..... 66
Middleton Hall, Co. Durham 57
Moat House, Tamworth 66
Mount Vernon Sanatorium, Northwood 60
Muncaster Sanatorium 61
Newmains Retreat, Lanarkshire 60
Nordrach-on-Dee, Banchory 61
Northumberland House, Finsbury-pk. 59
Northwoods House, Winterbourne .. 59
Norwood Sanatorium, Ltd. 66
Open Island, Heybridge 66
Peckham House 59
Pendynryn Hall Sanatorium 61
Plympton House, Plympton 58
Portsmouth Corporation Mental Hos. 57

ASYLUMS—(Continued).
Private Maternity Home, Hove 66
Proprietress, Streatham 66
Ringwood & Ings, Rayling Island .. 66
Rusbury Sanatorium, Northallerton.. 66
St. Andrew's Hospital, Dollis Hill .. 66
St. Andrew's Hospital, Northampton. 64
St. Luke's Hos. for Mental Diseases.. 67
Shaftesbury House, Formby-by-the-Sea..... 69
Springfield House Private Asylum, Bedford 66
Stocker, Craven-street 66
Stretton House, Church Stretton 66
The Grange, Rotherham 66
Vale of Clwyd Sanatorium..... 61
Warneford Asylum, Oxford 67
Wye House, Buxton 66

FINANCIAL, &c.—
Equitable Reversionary Interest Soc.. 54

HEALTH RESORTS, BATHS, &c.—
Alexandra Therapeutic Institute 61
Allevard-les-Bains 63
Baden-Baden 63
Badgastein 63
Bad Homburg 63
Bad Nauheim 63
Bad Stachelberg 63
Bad Wildungen 63
Davos 63
Divonne-les-Bains 64
Engelberg 64
Grisons, Oberland 63
Leysin, Switzerland 63
Peebles Hotel Hydropathic 64
Royal Ems 64
St. Joachimstal 64
St. Moritz-Dorf..... 63
Smedley's, Matlock 64
The Orchard Spa, Tenbury Wells 64
Woodhall Spa Bromo-Iodine Baths .. 65

HOTELS:—
Hotel Windsor 61
White Hart Hotel, Margate 61

HOUSE & ESTATE AGENTS:—
2, Acacia Gardens, St. John's Wood.. 75
Hampton & Sons, Cockspur-street .. 75
Ley Clark, Wimpole-street 75
CONSULTING-ROOMS :—
Bigood, Wimpole-street 75

LIFE & FIRE ASSURANCE, &c.:—
Bell Assurance Association 11
Prudential 54

MASSAGE:—
London School of Massage 55

MEDICAL ACCOUNTANTS, &c.—
Turner 75

MEDICAL AGENTS:—
Blundell & Rigby 76
Fieldnall, Limited 75
Manchester Clerical, &c., Association. 76
Medical Agency 76
Moore & Co. 76
Needes, Herbert 76
Needes, J. C. 76
Peacock & Hadley 76
Scholastic, Clerical, &c., Assoc..... 77
Turner 76

MEDICAL SCHOOLS:—
(LONDON.)
Central London Ophthalmic Hospital 63
London School of Clinical Medicine .. 63
West London Post-Graduate College.. 63

NURSING INSTITUTES:—
General Nursing Association 56
Hospital for Sick Children, Great Ormond-street..... 64
Leeds Trained Nurses' Institution.... 64
London Nurses' Association 65
London Temperance Male and Female Nurses Co-operation 65
Male Nurses Temperance Co-operation 65
Mental Nurses Co-operation..... 64
National Hospital Male Nurses' Assoc. 65
Nurses' Co-operation, Peerless-place. 64
Registered Nurses' Society 64
St. Bartholomew's Hospital Trained Nurses' Institution 64
St. John's House 64
St. Luke's Hospital, E.C..... 64
Temperance Association of Male Nurses, Ltd. 64
Temperance Male Nurses Co-operation 64
Temperance Male and Female Nurses Co-operative..... 65
The Retreat, York 65

OFFICIAL NOTICES:—
City of London Lying-in Hospital 63
Dr. Edith Pechey Phipson Post-Graduate Scholarship 63
Edinburgh Post-Graduate Courses in Medicine 64
Grocers' Company's Scholarships 63
Hospital for Sick Children..... 63
London Post-Graduate Association .. 62
North-East London Post-Graduate College 63
Queen Charlotte's Lying-in Hospital. 62
Royal College of Physicians and Royal College of Surgeons 63
Royal Institute of Public Health 74
Royal London Ophthalmic Hospital .. 62
Royal Society of Medicine .... Cover i
Royal Surgical Aid Society 63
St. Thomas's Hospital 64
University of Durham 63
West End Hospital for Diseases of Nervous System 62
York-road General Lying-in Hospital, Lambeth 62

PARTNERSHIPS & PRACTICES:—
Arnold & Sons, Giltspur-street 72
Blundell & Rigby 72
Dobb, Edmonton 73
Lee & Martin, Birmingham..... 73
Manchester Clerical, &c., Association 73
No. 282, L.O., Strand..... 73
No. 442, L.O., Strand..... 72
No. 349, L.O., Strand..... 72
Peacock & Hadley, Craven-street 72
Turner, Adam-street 73

RAILWAY & STEAMSHIP CO.'S:—
New Zealand Shipping Co. 55

SCHOOLS, PREPARATORY, &c.:—
Bassett House Boarding and Day School 54

TUTORS & LECTURERS:—
Beckton 54
Gemmell 54
Med. Corres. Col 54
Med. Graduates' College 54
Anight 54
No. 449, L.O. .. 74
Patterson 54
Schaulis 6
Wynn, Rich..... 52

For Index to Trade and Miscellaneous Advertisements see page 4.

A Lecture
ON
THE PHYSIOLOGY OF THE OPEN-AIR TREATMENT.

Delivered at Brompton Hospital for Consumption and Diseases of the Chest on Friday, March 7th, 1913,

BY LEONARD HILL, M.B. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY, LONDON HOSPITAL MEDICAL SCHOOL.

(*With Coloured Illustrations.*)

LADIES AND GENTLEMEN,—You heard on Wednesday Professor William Bulloch's lecture with regard to the infection of consumption, the origin of contagion, and so on. He laid before you the results that have been recently communicated by Hamburger, who reached the conclusion that 95 per cent. of all the children in Vienna, aged 15, are infected with tuberculosis. The evidence shows that the infection is not by the bowel, but by aspiration through the air, and the contagion is spread in almost all cases from man to man; milk is of very minor importance indeed. He concludes that almost every human is disposed to infection, and is infected in the conditions of city life; that a certain immunity to subsequent infection is established from the first infection and that there is a great tendency to relapses with a later infection. The conclusion then is that practically all infection occurs in childhood through inhalation. The primary infection is through the lungs, but most children recover from that primary infection. There is a tendency to relapse afterwards, and that relapse may be due to re-infection or to the old infection working out again. There are predisposing factors which bring about this relapse. Pulmonary tuberculosis is a late form of the disease; once started, it shows a tendency to increase. Therefore, supposing these conclusions are just—and there is a very great deal of evidence in favour of them, which Professor Bulloch brought before you—what we have to do is to take the greatest care in prophylaxis, to prevent infection during the first year or two, and in later life to prevent those conditions which bring about a relapse.

That brings me to the subject which I propose to deal with to-day—namely, the effect of open-air and exercise, and how it is we believe, and what grounds we have for believing, that this is effectual as a method of treatment, or still more as a method of prevention; how it is that open air and exercise act, what the physiological basis of this treatment is, and what effect they have upon the human body.

THE CHEMICAL STATE OF THE AIR.

It has generally been supposed that all the bad effects of close, crowded, and confined places are due to chemical impurity of the air, that the air is contaminated by the exhalations of human beings, and that it becomes impoverished of oxygen; but if we consider what people complain of, we find that people who are in crowded and confined places never complain that there is too little oxygen in the air, or too much carbonic acid in the air. What they always complain of is the heat and want of movement of the air. They say: "How close and warm it is! There is not a breath of air." "Let us go out and get cool," is the expression one hears in a ball-room. "Let us find a cool place." The ladies have fans, and they put on the thinnest clothes when attending social functions and so forth, all showing that what is felt is not chemical impurity, but some other conditions of the atmosphere which affect the heat loss of the body.

Excess of Carbonic Acid.

Now a great deal is made of carbonic acid in the air, but physiological experiment has conclusively shown that the percentage of carbonic acid in crowded rooms has nothing whatever to do with the cause of discomfort, for this simple reason: carbonic acid cannot get into the body. The respiration is so controlled by the breathing centre that the excess of carbonic acid (in the atmosphere) cannot enter into the body, and the percentage of carbonic acid in the lungs is always kept the same. It is the percentage in the lungs which controls breathing, and if we breathe an atmosphere containing, say, 1 per cent. of carbonic acid, the only result of breathing that atmosphere is that we breathe a little more deeply. We ventilate our lungs a little more in order to keep the normal percentage of carbonic acid in the lungs, and the excess of carbonic acid can never get into the body, and can never act as a poison, so that we can dismiss carbonic acid altogether. All that carbonic acid can do is to increase the breathing. If there is 2 per cent. of carbonic acid in the inspired air, it will increase the breathing by about 50 per cent.; this is only what happens when we take a little exercise—we produce a little more carbonic acid in our body, and we increase our breathing by 50 per cent., and we do not feel it. If we are walking we do not notice that the breathing has increased; nobody would notice an increase of 50 per cent. If I put you into an atmosphere containing 2 per cent. of carbonic acid, not one of you would be aware of the fact; there would be no discomfort. That I have proved, and others have proved, by confining a man in a chamber and having a bag containing carbonic acid gas secretly emptied into the chamber so as to raise the constituent CO_2 in the chamber to 2 per cent. or 3 per cent. No one in the chamber knows when the carbonic acid is introduced, or has the least evidence of it having been done. If we raise the carbonic acid percentage to 3 per cent. we should increase the breathing by about 100 per cent.; if we raise it to 4 per cent. we should increase the breathing by about 200 per cent.; to 5 per cent., by about 300 per cent., and to 6 per cent. by about 500 per cent. To increase your breathing by five times means, of course, that you are then breathing in the same kind of way that you would be breathing on taking fairly severe exercise. Of course, the breathing goes up naturally. We breathe, let us say, seven or eight litres a minute; if we take hard exercise we should be breathing five or six times that amount; if we took excessively hard exercise we should be breathing ten times that amount. Supposing there is 3 per cent. of carbonic acid in the air already, we should be breathing twice as much as normally. If we then tried to take severe exercise we should get into trouble, because we should not be able to breathe sufficiently to get rid of the carbonic acid which we were generating in our bodies. As long as we kept quiet we should not be in trouble at all; all we should feel, if anything, would be that we were breathing more deeply. Anybody who was watching us might see that we were breathing more deeply than naturally. Otherwise, carbonic acid has no effect at all. It is not till you get to 6 per cent., which is the normal percentage in the lungs—it is always kept at about 6 per cent.—it is not till you rise above that that you feel serious trouble. If carbonic acid accumulates in the body it begins to act as a poison by increasing the acidity of the blood, but it is a very slow poison even then.

We can therefore dismiss carbonic acid as having anything whatever to do with the question. The excess of carbonic acid in the air in a crowded room, if anything, will only make people breathe a little bit more deeply and make them ventilate their lungs more fully. If you want to make people breathe deeply, there is no easier way than to let them breathe an excess of carbonic acid. To make them expand their lungs, give them a tube to breathe through. Take a broad indiarubber tube a foot long. That will make them breathe a little deeper. If you put another foot on that, you will make them breathe still more deeply; another foot, and they will breathe more deeply still. You can adjust the pulmonary ventilation to what you like by extending the length of the tube and giving oxygen. That is a method of making people breathe more deeply which is useful from a clinical point of view.

Diminution of Oxygen.

As to the question of the oxygen in the atmosphere, there again the oxygen in a crowded room is never diminished by more than 1 per cent. The cracks and crannies in a room are always such as to let the outside air in. The diminution of 1 per cent. of oxygen has no physiological effect whatever. That is shown by the fact that when you go up an altitude, as in the Alps where there are health resorts 5000 feet high, you will find a diminished partial pressure or concentration of oxygen in the atmosphere. At all those famous health resorts there is less oxygen by weight in a litre of air,

considerably less oxygen than in the most crowded room? We know that people live in the Andes at heights of 10,000 to 12,000 feet, and even 15,000 feet up. While the normal partial pressure of oxygen in the atmosphere is 21 per cent. of an atmosphere, in the alveoli of the lungs it is normally 13 or 14 per cent. of an atmosphere. We can go up to such an altitude that the partial pressure of oxygen in the atmosphere drops down to 13 or 14 per cent. without noticing it, at any rate as long as we are resting; if we take hard exercise we would notice it. People get a little mountain-sick from want of oxygen when they first go up these altitudes, but they soon get accustomed to it unless they have heart disease or there is some failure of the normal mechanism of the body. Changes take place in the blood, in the amount of hæmoglobin and the affinity of hæmoglobin for oxygen, which adapt the body to the lessened oxygen pressure. The body sets its own rate of metabolism, and so long as it gets enough oxygen to satisfy its needs it is uninfluenced by the concentration of oxygen in the atmosphere. These considerations show conclusively that oxygen has nothing to do with the question.

Therefore the chemical state of the atmosphere, as far as regards carbonic acid and as far as regards oxygen, has nothing whatever to do with the discomfort which is felt in crowded and confined places, and it has nothing whatever to do with the success which results from open-air treatment.

THE SUPPOSED EXISTENCE OF ORGANIC POISONS IN EXPIRED AIR.

We now come to the supposed existence of organic poisons in expired air. A great deal is made about that. It has got into all the popular books on hygiene, but when we come to examine that question we find that there is no evidence worth anything at all as to the existence of this organic poison in expired air.

Negative Results of Experiments.

The evidence was first brought forward by Brown-Séquard and d'Arsonval, and what they did was this. They expired through a vessel surrounded with ice and the water exhaled in the breath was condensed. They took that condensation water and injected it into animals. They said the animals were poisoned by it; therefore, they said, there was poison in this condensation water which was exhaled. That was one of their experiments. Another of their experiments was to put a number of animals in glass vessels and draw the air from vessel to vessel, so that animal No. 6 was breathing the air which had come through the other five vessels where the other five animals were. They said that Nos. 6 and 5 got poisoned, while Nos. 1 and 2 remained in perfect health. Those were the kinds of experiment that were brought forward. Well, now, a great number of very trustworthy and skilled investigators have now repeated those experiments, and they have found no evidence in favour of the existence of these poisons. All the evidence of the men we can trust best is wholly negative. To take the second kind of experiment, it has been shown that why these animals died in the last boxes, Nos. 5 and 6, was because errors were made in experimenting; the tubes were wrongly placed, and leaked so that the current of air did not come through at all and the animals were merely asphyxiated from want of air; or else the current of air was made so slow that the last animals were given something like 15 per cent. of carbonic acid to breathe, a poisonous amount—errors of that kind were made.

I have tackled this question in such a simple way that there is no question about it at all. I do not have a number of chambers and tubes leading through from animal to animal. What Dr. Martin Flack and I do in our laboratory is to take a number of deep boxes and put a number of guinea-pigs and rats at the bottom of those boxes and have the lids shut down to such an extent that day and night there is more than 1 per cent. of carbonic acid in those boxes. There the animals live every day; they are thoroughly cleaned out and well fed, and they live at the bottom of those boxes breathing in the exhalation of their own breath day after day, and the ventilation is so arranged, as I said, that at least 1 per cent. of carbonic acid (produced by themselves) is in the boxes. These animals do not suffer; they live week after week. We have had them in the boxes for months. They beget young under those conditions. We have to remove them when pregnant to other boxes, because the conditions are not favourable to maternity in a crowded and confined space like that. We put in young ones, and under those conditions there is no sign of poisoning; the animals live and grow. We have also a number of control boxes, containing guinea-pigs, perfectly ventilated. In the cool weather—there were some frosty days—the ones that were living in the closed boxes were warmer in the bottom of their boxes and put on more weight than those living in well-ventilated surroundings. I do not say they are hardier; the others may be hardier, if we could test it, but, at any rate, there is no sign of poisoning at all.

As to the condensation water, the experiments which have been done are really too absurd. You would hardly credit how absurd these experiments are. The condensation of water is obtained by making the man breathe through a vessel surrounded by ice perhaps for eight or nine hours. One gramme of that condensation water has been injected into a mouse weighing 13 grammes. This is equivalent to injecting 5 kilogrammes of water into a man weighing 65 kilogrammes. Five kilogrammes of water equals 5 litres of water, and there is a pint and three-quarters in every litre. What man is going to stand having 5 litres of water put into him suddenly, perhaps not even warmed? It is a most ridiculous experiment. And yet the mouse has not died in many cases, but only shown signs of illness, which are supposed to point to poison being in the condensation water. That is the kind of experiment upon which these assertions about the chemical organic poison in exhaled air are based, assertions which have got into all the popular books and been spread all over the world. It is known that water, even distilled water, is toxic. Any distilled water in the laboratory gets infected with bacteria. There are swarms of bacteria that live in a vessel of water on the traces of ammonia and salts that are dissolved out of glass, and the traces of ammonia and dust in the atmosphere. Such water is toxic, and the cause of symptoms of poisoning sometimes observed when salvarsan is injected has been traced by my colleagues, Drs. Fildes and McIntosh, to the use of water contaminated with bacteria. If you use water that is freshly distilled and contains no bacteria at all, you never get toxic symptoms. Such condensation water experiments as I have mentioned can be dismissed as not worthy of notice. They are too silly for words.

Asserted Presence of Volatile Protein in Exhaled Breath.

Rosenau and Amos in America recently have supported the organic poison theory. They obtained condensation water by breathing for many hours into a vessel surrounded by ice, through a plug of glass wool which acted as a filter, and said the condensation water was pure, and could not be contaminated with saliva, because the plug of glass wool would keep it all back. They injected it into guinea-pigs, and a month later they injected into a vein, or straight into the heart, of those guinea-pigs a trace of human serum. There resulted in these animals anaphylactic shock, and some died. Rosenau and Amos concluded that human protein was exhaled in a volatile form which passed through the plug of glass wool and was condensed with the water by the ice, and that this volatile protein sensitised the guinea-pigs and hence the anaphylactic shock when, a month later, they put in the human serum. My criticism in regard to this experiment is that when one breathes for many hours through a plug of glass wool the plug will get wet through with saliva. The expired air will then carry droplets of saliva away from the further side of the plug, and the condensation water will inevitably get contaminated with saliva which contains human protein—viz., mucin. It is that which sensitised the guinea-pigs. The experiment does not prove the existence of a volatile protein (a toxic substance in the exhaled air) as Rosenau and Amos thought.

Dr. McIntosh and Dr. Martin Flack and I have tried the experiment in what I consider a far simpler, and—if I may say so—more sensible manner. We have taken guinea-pigs and rats, and put them (to live together) at the bottom of those boxes which I have described to you. There they have lived week after week, the guinea-pigs breathing the rats' inhaled air. If there was any protein inhaled in the rats' breath, that protein would be breathed in by the guinea-pigs. Rosenau and Amos assert there is

such a volatile protein, and that an inhalation into the lung goes straight into the blood. Of course, we know that a foreign protein which is eaten and taken into the alimentary tract does not sensitise us. We eat beef and yet are not sensitised to ox serum. Rosenau and Amos go so far as to say that people who live with horses—hostlers, and so on—may get sensitised by breathing the exhalations of horses, and that is why some are found to be sensitised to a first dose of antidiphtheritic serum. I should have thought rather of the hair and epithelial scales which an hostler rubs off a horse—in order to prevent breathing too much of which he makes that peculiar hissing noise. These contain protein and get into the throat and respiratory tract. Well, we have kept the rats and guinea-pigs together at the bottom of the boxes for weeks and weeks, and at the end of the time we have injected into the guinea-pigs' veins a trace of the rats' serum, with no result at all. Not a single guinea-pig has been made ill to the slightest degree. A month later we put into those same guinea-pigs another trace of rat serum. The first trace sensitised them, and every single guinea-pig that got the second trace rolled over dead. How sensitised they were is shown by the fact that in one case we put the syringe into the ear and missed the vein; we squeezed the syringe the least little bit, and a trace of the rat serum went into the tissues of the ear, not into the vein. We pulled out the syringe and prepared to try to get it into the vein for the second time, but the guinea-pig rolled over dead, poisoned by the minute trace that went into the tissue of the ear. That shows how tremendously sensitive to anaphylactic shock are guinea-pigs which have received an injection of rat serum. Our experiments show that there is no volatile protein exhaled in the breath at all. Rosenau and Amos's claims are entirely devoid of support.

BAD SMELLS: THE INFLUENCE OF THE IMAGINATION.

From what I have said, then, we may dismiss the chemical organic poison theory. The ill effects of a confined atmosphere are not due to excess of carbonic acid nor to want of oxygen; and there is no organic poison in exhaled breath. Of course, we get other exhalations besides the breath in crowded rooms—exhalations from the skin, exhalations from the alimentary canal, and so on. So do the guinea-pigs that live in the bottoms of our boxes, and live in health and grow and breed. All these small animals live crowded together in their sleeping places. So long as the atmosphere is not too warm, rats prefer to sleep in a chamber that has got 3 to 4 per cent. of carbonic acid in it. They will sleep there rather than go out into the cold, but if we put in some wet bread and raise the temperature inside, the rats will come outside; they do not like it. They do not like a high wet temperature. That will bring them out. They do not mind 3 or 4 per cent. of carbonic acid a bit. They are quite comfortable in that. These animals when they are huddled together in their nests naturally breathe a relatively large percentage of carbonic acid. They naturally breathe air containing less oxygen, and naturally breathe each other's breath. Every one of us naturally breathes his own breath, because when we exhale we leave our air-tubes, the nose and so on, full of exhaled air; at the next inspiration we draw that back again. We are always inhaling about one-third of the air we exhale. All that goes to show that exhaled air is not poisonous. As regards other exhalations from the body, they certainly make the air smell, but to say that the air smells is quite a different thing from saying that it is poisonous. I admit that the air smells. I admit that that smell may have a depressing action on the nervous system, especially of sensitive people and people who think it will do them harm, because the imagination plays a great part and has a tremendous influence upon humanity. I had an excellent example of that only the other day. The secretary of a large institution said the clerks on the third storey were being poisoned by stove fumes that came up into the room; would I mind coming to have a look to see what I could find out about it? I found there was a stove down below which was heating the boiler—a coke stove. The coke fumes leaked round the hot-water pipes, especially when the clinkers were taken out by the engineer; they found their way into the well of a lift, which terminated in this clerks' room three storeys up; they came out from the top of that well through the cracks in the door, and made their way towards the fireplace, and the clerks sitting between the fireplace and the lift smelt those fumes. The lady clerks told me a tale about how they suffered and felt faint, and all the rest of it; but the man down below who was turning the clinkers out of the stove, what about him? He was breathing, say, 50 times more of these fumes than the lady clerks, and yet he was doing his work and not complaining. The imagination of these lady clerks had led them to exaggerate the effect of these fumes to an extraordinary extent, and as one can easily see, if they were made so ill by the fumes the man ought to be dead.

People who have to deal with horrible smells—that is, smells which are horrible to us—get quite immune to them, and as to those men who have to deal with these offensive smells, such as sewer men, men in bone manure and soap factories, men in fried fish shops—there is no evidence that their health suffers from the smell. You rapidly lose all sense of a smell if you are obliged to carry out one of those trades, and very rapidly indeed if you go into a sewer, even if you are not used to it. We will grant that smell puts one off one's appetite and makes one feel depressed and so on, and therefore that smell should be got rid of; but the way to get rid of smell is not by trying to blow it out by ventilation, but by cleaning the source of it up. Pettenkofer once remarked that if there was a dunghill in a room it was no good trying to blow away the smell by means of ventilation; the right thing to do was to clear out the dunghill. If a room smells it is because the room is not clean, or the bodies of the people are not clean, or their clothes are not clean, and the right thing to do is to clean up the room and the people in the room.

HOW DOES THE ATMOSPHERE AFFECT PEOPLE?

We now come to the question of how the atmosphere does really affect us. We know that we catch catarrhs, &c., by infection, and in the matter of consumption I think there is no doubt Hamburger is right.

Spray Infection.

There is a method of infection which is of the utmost importance—that is, spray infection, which Fluegge brought into prominence by a series of admirable experiments some years ago. The real infection that matters is the infection by the spray of saliva direct from man to man. While we are breathing quietly and normally the expired air is almost sterile. But if we sneeze, or cough, or sing, then the explosive output of the expired air carries away the finest spray of saliva which spreads to an extraordinary distance. I have seen Professor Bulloch place culture plates along a table 10 feet in length, wash his mouth out with a harmless bacterium which can be easily identified, stand at the end of the table and say a few words, then cover up every culture plate and place them in the incubator; colonies are found in every single culture plate, crowded in the plates near the speaker, and a few colonies in those far away. I must, as I am speaking, I am sorry to say, be disseminating this excessively fine spray of saliva to an extreme distance all over the room, and so is everybody when he coughs or sneezes or speaks. If you are speaking close to a man, straight face to face, it is obvious that the spray will give a most massive infection, that the spray of saliva droplets may contain hundreds of bacteria. Supposing the other man was just inhaling with his mouth open, and a person with the infection is just speaking, some droplets of saliva may be carried straight down his windpipe right down into the lung.

The other day there was a case that came under Professor Bulloch's notice—a man with acute pneumonia, who traced back his infection to a company meeting at which the secretary present had a cold. With streaming eyes and sneezing continually, this secretary appeared to be at the height of an infectious cold. At this same company meeting there was one man who got pneumonia and died. There was another man who caught a cold, which affected his ears, so that his tympanum was opened and the pneumococcus was found. The third man, who came under Professor Bulloch's care, was a typical case of pneumococcic infection. It is quite clear those three men were infected at that meeting by the spray sent out into the air by the secretary, who was expounding the business of the meeting. This spray infection cannot be prevented very easily if people are going to cough and talk and sneeze and go about among the company in crowded rooms with these infectious colds.

Any infectious cold may be a pneumococcic cold. There are very many persons who are walking about with hardly any symptoms of disease, but whose saliva is teeming with tubercle bacilli. I remember the case of a young woman in perfect health apparently. She complained of a little cold, she was hoarse for singing, could something be done to prevent that hoarseness? Professor Bulloch examined her sputum and found it swarming with tubercle bacteria. This woman was spraying the bacteria into the room whenever she spoke, sang, or coughed. She went about her business and made a complete recovery. The only way we can prevent spray infection is by keeping people in acute infective states isolated, keeping them away, making them stop at home, or by teaching them to sneeze and cough always into a handkerchief, and if they are speaking we can induce them to speak with a newspaper held in front of their mouths, which would catch all the spray quite effectively; or, if we want to protect ourselves against such a person, we could casually hold a paper in front of our mouths without being rude. In that way, by such simple means, I believe that infection from these colds, which cause so much misery and discomfort, might be limited to a large extent. If people could all be trained when they get into a state of acute infection with catarrh of the nose to cough and sneeze into handkerchiefs and to speak with a newspaper held in front of their mouths, or at least to keep at home if they are not content to do that, that would prevent the spread of these infections.

Influence of Warm Confined Air on Nasal Mucous Membrane.

Dr. Muecke and I have lately been examining the nose to see what happens to the mucous membrane in a warm atmosphere. Of course, it is quite clear that infection occurs in certain states of weather; that colds run round when there is a sudden change to cold moist weather. We wanted to see if there was any reason behind that. When people are away at the seaside or on the mountains, where they are exposed to any weather, rain and wind, and live in the open air, they get no colds. Children who are out on the shore paddling and exposed to weather and wind and all that kind of thing never get any colds. The moment they come back to crowded places and chill autumnal weather they get them in the schools, and these colds run round and everybody catches them. What is the reason for all that? There must be some fairly simple condition which causes that. There is infection in crowded places to begin with. But then, at the seaside in little cottages and lodgings people crowd together in the evenings, and they would infect each other if a cold were going round, but the cold does not go round in those conditions. It is when you get the cold autumnal winds and you begin to shut up the windows and light fires, and start the heating apparatus, and so on, that the colds begin to come back.

This (see coloured plate, Fig. 1) is the condition of the nose as seen under normal conditions when a person comes in from cool surroundings, a cool atmosphere, or the outside air. The mucous membrane is shrunk; it is taut. If you touch it with a probe you cannot pit it, it is not congested, and there is very scanty secretion. That (see Fig. 2) is the effect of going into a heated chamber where the air is at a temperature of about 80° F. and pretty well saturated with moisture, conditions such as exist in crowded places, meeting houses, or ballrooms. The mucous membrane of the nose becomes turgid with blood, and it is covered with a very thick secretion, and the tissues are all swollen. You can push the probe into the tissues and depress them, and it does not come out for some little time, showing how boggy it is. The airway is so diminished that if you have got a spur or anything of that kind you cannot breathe through the nose when you get into these hot conditions. That (see Fig. 3) is the effect of putting on a fan in the hot room and whirling the same air. The air so whirled by the fan will bring the nose to more like the conditions shown in Fig. 1 and lessen the constriction of the air channels. That (Fig. 4) is the effect of going out in the open air for a few minutes, the cool open air of last month, of winter—not very cold, but cool open air. The blood goes out as the vessels contract, but one still finds that the mucous membrane is boggy, that it pits, and that there is a great deal of this thick secretion upon it. You see the conditions are such when you go into these hot places that the mucous membrane becomes greatly swollen; there is a great deal of tissue lymph in it, a great deal of thick secretion; the exhaled bacteria that are thrown in masses on it are caught in the thick secretion. Then when you come out into the cold again the blood-vessels shrink up so that heat should not be lost from the body, and you are left with a nose containing thick secretion and a great deal of tissue lymph, a medium for the growth of bacteria, while it loses the blood which defends it from infection; whereas if you never go into a hot room at all you have a nose in good condition, taut, and with a scanty secretion; and the organisms have not got a hold on the mucous membrane, and there is nothing for them to grow in. When the mucous membrane is kept taut and the flow of blood is rapid, the inhaled air is warmed up quickly and moisture evaporates from the nose, so as to saturate this air at body temperature; that means more plasma comes out of the blood-vessels, and this contains the immunising substances. The ciliated cells are well supplied with plasma, and they lash well, and the offensive bacteria are kept out. But when you come back to this condition where you have much secretion and boggy tissue, and the blood has been shrunk out by vaso-constriction, then you have got a suitable nidus for bacteria to grow in.

The Effects of Open and Confined Air upon Metabolism.

I maintain that the whole of the bad influence of confined quarters and the good influence of open air is a question of the heat and moisture of the atmosphere. The evidence that heat and moisture of the atmosphere have a physiological effect, a potent, a tremendous effect, upon the metabolism of the body, is as strong as anything can possibly be. We fail to find any evidence of the toxic effect of exhaled air, but we find any amount of evidence of the most convincing kind to prove that the temperature and moisture of the air have a most profound effect upon the metabolism of the human body.

If the atmosphere is cool and moving it will continually carry heat away from the skin. It will keep the vessels of the skin contracted; the blood will be driven into the viscera, where it will become metabolised, not drawn into the skin but driven through the viscera and through the brain where it is required. Moreover, the cool moving air acts upon the skin and stimulates the nerves, and the cutaneous nerves have a very great influence upon our comfort. When we get into confined places the air becomes monotonous; it is not moving; we get a monotonous, uniform temperature of the skin; the skin gets hot, flushed with the blood, and the temperature of the skin gets almost the same as the temperature of the body. Instead of being considerably lower than the temperature of the viscera, it gets to almost the same point, and if the room is very hot it gets quite up to that point. The sensory nerves are no longer stimulated because there is no change. If, on the other hand, the air is continually moving, sometimes blowing, sometimes not blowing, it is continually stimulating the nerve endings of the skin and the nervous system generally, and it rouses us to activity, for in order to keep warm we have to use our own body furnace, and that is what we ought to do. We do not want to trust to clothes and fires altogether, because that means we are not using the natural body furnace. We take refuge in these other mechanisms for keeping warm if we do not use our own body furnace. What does that mean? That means that our metabolism is reduced to a low level. That means that we keep quiet and do not have to move. That means that we do not circulate our blood well, because exercise has the most colossal effect upon the circulation. The whole of my researches on the circulation goes to show that the duty of the heart is to deliver the blood to the capillary vessels and it is the duty of the muscles to support the arteries and pump the blood back again into the heart, and if the muscles are not doing their work the circulation cannot be efficient. When the muscles are at work the heart beats more quickly, and the blood is carried round the body much more quickly; each minute the whole blood volume is carried round the body many times.

Then when we are taking exercise we breathe more deeply in order to get rid of the carbonic acid, and we take in more oxygen, the blood is more oxygenated, the lungs are better expanded, and this is a most important thing for resisting infection—the expansion and oxygenation of the blood takes place in every part of the lungs. Every part of the lungs is expanded if you take exercise. The ventilation of the lungs

may be ten times as great as normal if you take extremely severe exercise—five or six times as much during ordinary hard exercise. That has a most colossal effect upon the lungs, expanding every part of them, and it has a colossal effect upon the circulation of the blood. And then, as we are using up energy in our muscles, we have to supply that energy, and that means we have to eat more, so that the appetite is excited; we eat more and absorb better. The food that we eat is all absorbed and utilised by the body; it does not go into the great bowel, as a great deal of our food does when we are living sedentary lives. Rejected by the absorbing mechanism because the body does not want it, its fate is to become decomposed by bacteria and turned into fæces and wind and toxic products of bacterial decomposition, which, if absorbed into the blood, may give us all the symptoms of chronic poisoning, such as anæmia and headache. That is all the fruit of sedentary work and living a sedentary life. If you are going to live a sedentary life and keep warm by means of clothes and fires, you knock down your body furnace to such an extent that you want very little food, and the only way to live healthily and not degenerate our tissues by the products of bacterial decomposition thrown out of the large bowel is to live a very simple life and eat sparingly. If you live a sedentary life and eat large meals and drink alcohol, you will get your body into such a condition that its metabolism must go wrong after a certain number of years. Either excessive substances are going to be absorbed into the blood which are not wanted, or you are going to be poisoned by toxic products derived from bacterial decomposition in the great bowel, and then the surgeon comes along and says the drainage system is out of order and he must short-circuit it.

Exposure to wind and cold leads to increased activity on the part of the body and increased metabolism, and it is that which has an effect upon tuberculosis; it is that increased metabolism which is the end we have in view to get more blood circulated, more oxygen breathed in, the lungs better expanded, more food eaten, and if we eat more food we are more likely to get those building stones which are found in food, some of which are exceedingly rare substances, like the vitamines, which are found in outer husks of wheat and rice berries, but are not found in white bread or polished rice. These are the kind of things which are absolutely necessary to the growth of the body, these vitamines. If we do not eat enough food to get sufficient of them, then the metabolism of the body suffers. Therefore it is wise to use our body mechanism so as to be able to eat enough food to get all the building stones required to nourish our frames and produce all the secretions of the body that are necessary for its metabolism.

Increase of Tuberculosis in Confined Spaces.

That is the effect of open air and the way it acts. To show that confinement acts in spreading tuberculosis in two ways there is the evidence communicated to me by Dr. A. W. Wakefield coming from Labrador and Newfoundland, where the fishermen live in little shanties and the atmosphere is perfectly pure—e.g., along Hudson Bay. They live in little shanties heated by American stoves, and they shut themselves up and keep the temperature at something like 80° F. The women and children there hardly ever put their noses outside the door during the winter; the men just go out to fish. They live on white bread and molasses, and tea, which they brew in the pot by adding a little more to the leaves that are already in, and do not empty the pot till the leaves come out of the top and they cannot get water in. They only have in addition a little fish sometimes, and that they eat boiled and throw away the water, and so they do not get the vitamines I have been talking about. These shanties are so small that Dr. Wakefield, when he was travelling, found there was hardly room for a visitor to sleep with the family on the floor. That shows how small these shanties are. The water ran down the walls and the windows were covered with moisture, and if there was a case of tuberculosis the patient would spit all round and the others know nothing about the danger of infection. These fishermen, whether suffering from tuberculosis or not, would spit anywhere till the spittle dropped down the window frames of the shanty, absolutely indifferent to what happened. Such conditions as those, of course, are just what would spread infection among the unfortunate children. We have got all the conditions for massive infection there, with a confined and hot atmosphere, which limits the metabolism, the ventilation of the lungs, the intake of oxygen, the circulation of the blood through the lungs; everything leads to or is in favour of infection because the immunity depends upon the blood and the serum which passes into the tissues, and the lungs, if not ventilated properly, do not get enough oxygenated blood in all their parts. Investigating the oxygen content of the blood taken from the median vein, J. F. Twort and I have found it increased 5–10 per cent. by deep breathing, and this proved that in parts of the lung during quiet respiration the blood is not oxygenated.

From Lofoten, in Norway, I have had evidence sent me through the medical officer in Tromso. He says at Lofoten in 1907 the cases of tuberculosis among the fisherfolk were in the proportion 5 males and 6 females; in 1908, 5 males and 5 females; in 1909, 7 males and 5 females; in 1910, 9 males and 7 females; in 1911, 14 males and 4 females. There is a striking increase in the proportion of males who are infected, going up from 5 to 14, while the females vary between 6 and 7. This he puts down to the fact that the fishermen in Lofoten have given up their old open boats. They used to fish in open boats during the spring and summer ever since the time of the Vikings, and lived in draughty shanties and walked about the shore. They have given them up and taken to motor-boats. They live in these small motor-boats—day and night, six or eight men—and fish nearly all the year round and sleep in the cabin heated by the motor, where they sit and smoke and eat as well as sleep, living in a confined space which is built of iron, so that no ventilation can take place through the walls of it. That is the cause of the increase of the disease amongst the men. Directly you get these confined spaces with American stoves or motors to heat them, then you have the conditions which spread the infection. That is my contention.

Ventilation in Ships.

In our battleships, of course, we have got exactly those conditions. The Local Government Board insist that a pauper should have 1000 cubic feet of space allotted to him in a dormitory. In our Dreadnoughts 80 cubic feet is the space for each sailor, and in some cases it is even lower than 80. A battleship is not a brick building. In a brick building a great deal of ventilation takes place through the walls and windows and doors, even if it is shut up, but a battleship is a steel structure, and no ventilation of that kind can take place at all. Therefore, it is absolutely necessary to have artificial ventilation. In these battleships they have air-trunks which convey the air driven in by fans. The louvres open in the ceiling, but the men, when they feel the cold air blowing on them, can very easily put their hands out and shut them up. The British sailor does not like cold air, and he pushes out his hand and shuts the ventilator up near his hammock. I have seen the louvres sealed up with canvas and painted over in a super-Dreadnought. Here again the conditions which matter are the moisture and the heat of the air. In many places in these battleships you will find a wet bulb temperature of from 80° to 90° F. To be under those conditions depresses the vitality of the body, and if there is a tuberculous subject there the spray of his saliva will be carried from him to others. The saliva spray will not be cooled down, and the tubercle bacilli may preserve their vitality undiminished in the warm atmosphere. The right thing to do under all these conditions is to bring in fresh air through hose-pipes, and have extraction fans working, and so on, in order to keep the air cool and moving in every possible way.

Recently Mr. James Keith, of Messrs. Keith, Blackman and Co., told me some facts about the *Lusitania*. In the *Lusitania* engine-room, working at full steam, the temperature used to reach 150° F. It is distressing for the men to work in that temperature; it strains the heat-regulating mechanism of the body, and some of the energy which ought to go to external work is used to keep the temperature down. The blood is sent to the skin and the heart has to exert its power in order to drive the blood to the skin and cool the body instead of sending it to the muscles and viscera where it is wanted; so the health of the men is depressed. Mr. Keith has put a big air-trunk in, 5 or 6 feet in diameter, which goes straight down from the deck, and at the bottom of that trunk he has put a 5-foot fan, which pulls in the outside air,

not warmed in any way, and to such an extent that it pulls in 6,000,000 cubic feet of air an hour. The result of that is that the temperature is brought down from 150° to 70° F., and no draught is felt at all. So long as it is as warm as that no draught is felt, and the comfort to the men and the effect on their health, I am quite sure, will be extraordinarily good.

Ideal Conditions.

In all our rooms we want to have the air moving—I do not say to make an unpleasant draught, but to have the air gently moving. The ideal conditions are radiant heat, such as you get on a spring day when the sun is shining and there is frost in the air and a gentle breeze, with a warm sun. Those are the ideal conditions. In our rooms we want to get radiant heat. We never want to heat the air if we can help it. In heating a room let us heat it to the lowest degree compatible with comfort. Try to heat it by radiant heat and keep the air moving.

Demonstration of Importance of Moving Air.

The thermometer is not an instrument which tells us what the body feels. Suppose I put eight students packed like sardines in my little experimental chamber (it contains 3 cubic metres), seal them up air-tight, and by their own body heat let them raise the temperature to 85° F. and saturate the atmosphere with their own moisture. Let them stay so that the carbonic acid gets to 4 per cent., and the oxygen diminished below 17 per cent., so that they cannot light a cigarette. They will try and try in vain, and think there is something wrong with their matches, and borrow matches from somebody else. They do not feel any want of oxygen, and so do not know why they cannot light a match. They get uncomfortable, hot, flushed, and wet with perspiration, and cease laughing and talking. I have got in the chamber a powerful fan. I put that on and stir the air, and everybody is perfectly comfortable, and they all begin laughing and chaffing. It is just the same old air with 4 per cent. of carbonic acid in, but the air at 85° is thoroughly stirred, and the fan blows away the stagnant air in their clothes which is heated up to the body temperature and saturated with vapour; it blows that out and brings the air at 85° in contact with their body. Instead of having stagnant air at 99°, they have air at 85° blowing round their body; that cools them and makes them feel all right. That experiment shows that it is the body-heat stagnation which is troubling them.

Suppose the thermometer in the chamber registers 85° wet bulb and 86° dry, and the fan is on. Switch the fan off; the thermometer still says 85°-86°, although you feel thoroughly miserable when the fan stops. You put the fan on and you feel perfectly comfortable, but still the thermometer says 85°-86°. That shows how the thermometer fails to demonstrate the conditions which we feel. It is no use for people to trust to the ordinary thermometer, neither wet nor dry, because it does not show heat loss. It only shows the temperature of the room, the average temperature of the furniture and surroundings and walls; it does not show us the heat loss of the body.

The Kata-Thermometer[1] or Comfort Meter: An Apparatus for Showing Rate of Heat Loss.

I have instruments here which I have contrived for showing the rate of heat loss, and I believe these will prove to be of general utility. I have two large bulbed spirit thermometers. The bulb of one is covered with muslin. The stems are marked at 110°, 100°, and 90° F. I warm the bulbs to 110° F. in warm water, then take them out and dry one, and jerk the excess of water off the other. I let them cool and take the time occupied in the menisci falling from 100° to 90°. The wet bulb loses heat by evaporation and the dry by radiation and convection. On an ideal spring day the wet took 45 seconds and the dry 2 minutes 20 seconds. In a room with closed window and door, and heated up to 70° F. by an anthracite stove, they took about 1 minute 30 seconds and 5 minutes. Well, the conditions must be altered there, so that they fall in times approximating to those of the ideal spring day. The ventilating and heating should be arranged so that the instruments fall from 100° F. to 90° F. in about 45 seconds to 1 minute and 2 minutes 30 seconds to 3 minutes and then comfort and healthy conditions will be obtained, particularly if the source of heat is a radiant one—an open fire or modern gas fire.

Effects of Cold Moving Air on Temperature of Skin and Metabolism.

Another thing I would like to tell you is, I have got a little wet and dry thermometer here which I can carry this way. I slip it down my shirt like this, between the skin and the shirt. I have been taking a number of observations with this on wintry days. I am accustomed to getting up at half past 6 in the morning and taking a cycle ride up to a fine bathing pool in Epping Forest; I have a dip in this water and out again, and cycle back to breakfast. I have kept that up with few days off this winter. Once or twice I had to get into an ice hole. Riding up to this pool I have been observing what happened to the skin-shirt temperature. Ordinarily, sitting in front of a drawing-room fire one's skin-shirt temperature is about 32° C.—dry 32°, wet 30°. (I am afraid I must give you figures centigrade.) The bodily temperature is about 37° C. Riding home after my bath in the face of a cold wind the temperatures are far lower. Once they were 14° and 11°; another time 16° and 14°. After my bath I am cooler than I am when riding to the bath, because the bath constricts the vessels of the skin. These temperature readings show you what a colossal effect cold moving air has in cooling the skin. Instead of being 32°, as it is in front of a fire, if you go out in a wind in a motor car or on a bicycle with the wind going through you, you have skin-shirt temperatures of more like 16° and 14°. This has a great effect in driving the blood into the body, stimulating activity and increasing metabolism.

CONCLUSION.

To sum up. I am convinced that the whole of the effect of open-air treatment is due to the movement temperature and moisture of the air and has nothing to do with its chemical properties. Conformity to a better mode of life will enormously increase the health and happiness of everybody. Modern life is tending to put people into confined places, heated by convectors, with perfectly made windows, no draughts, and that kind of thing, and it is diminishing the metabolism, and vigour, health, and happiness of everybody, quite apart from causing consumption. Man cannot go straight into these artificial conditions when he has been for a million years living an out-door life, facing every element, wind, cold, and rain. He cannot do that. What we have got to do is to compromise and arrange matters so that we may get open-air exercise and exposure to wind and weather. Do not let us put up these great skyscrapers, or have these artificial cellars for people to live in, but let us have facilities for open air, and playing fields, and exercises of the body, and then we shall enormously increase the happiness of the people.

[1] The kata-thermometers are made by Mr. J. Hicks, 8, Hatton-garden, E.C.

Description of Figures on Coloured Plate Illustrating Communications by Professor Leonard Hill and Mr. F. F. Muecke.

FIG. 1.—Normal nose after being 10 minutes in outside atmosphere.

FIG. 2.—Same nose after 10 minutes in atmosphere 83° F. wet bulb.

FIG. 3.—Same nose in same atmosphere as Fig. 2. Air stirred by revolving fan.

FIG. 4.—Same nose 10 minutes after leaving heated chamber.

FIG. 5.—Deviated septum. Nostril of concave side. Inferior turbinal greatly enlarged. Middle turbinal invisible.

FIG. 6.—Same nostril after 10 minutes in atmosphere 83° F. wet bulb.

Description of Figures on Coloured Plate Illustrating Communication by Professor Robert Jardine and Dr. A. M. Kennedy.

FIG. 1.—Kidney from Case 3. (1½-2 days' complete suppression of urine.) The cortex is extensively mottled with reddish and yellow areas, the red areas apparently being due to congestion and hæmorrhage, while many of the yellow areas seem like small anæmic infarcts. The outer two-thirds of the cortex are involved as well as the inter-pyramidal portions. The surface is uniformly mottled also. It is a symmetrical necrosis, both kidneys showing similar characteristics.

FIG. 2.—Kidney from Case 2. (2½ days' suppression of urine.) Showing more or less uniform necrosis of the outer two-thirds of the cortex separated from the living inner third by a hæmorrhagic zone. At intervals from this zone of congestion numerous strands of congestion pass out to the surface. The necrosed area also involves the inter-pyramidal cortex. Both kidneys presented similar characteristics.

TO ILLUSTRATE A COMMUNICATION FROM PROFESSOR LEONARD HILL AND MR. F. F. MUECKE.

Fig. 1.

Fig. 2.

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

W. THORNTON SHIELLS.

TO ILLUSTRATE A COMMUNICATION FROM PROFESSOR ROBERT JARDINE AND DR. A. M. KENNEDY.

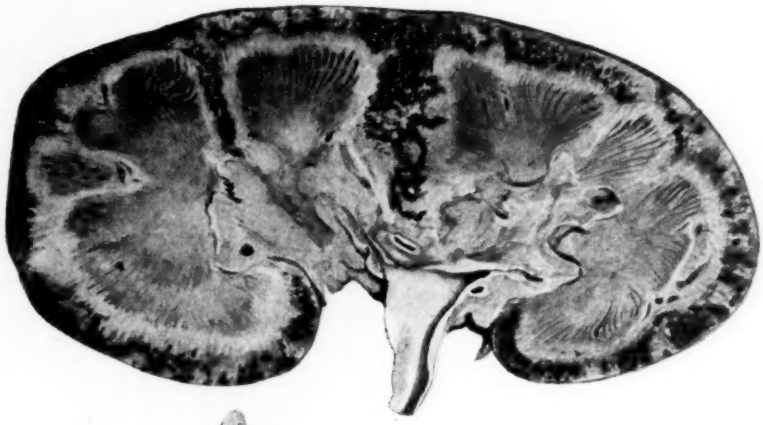


Fig. 1.

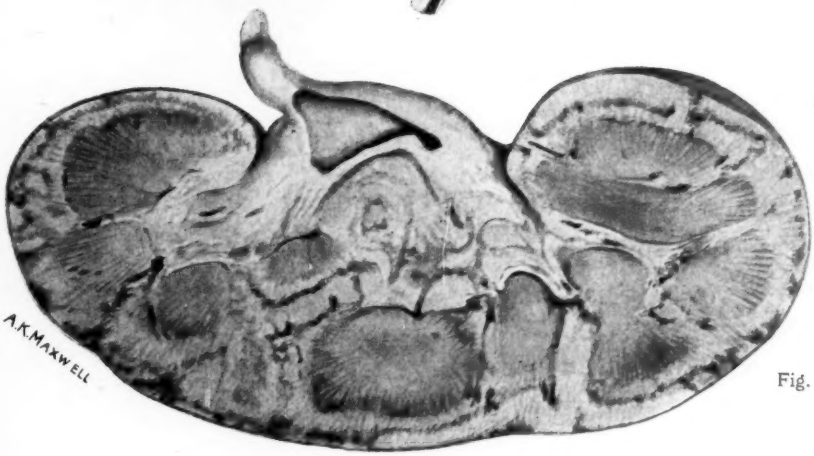


Fig. 2.

"COLDS IN THE HEAD,"

AND THE INFLUENCE OF WARM CONFINED ATMOSPHERES ON THE MUCOUS MEMBRANE OF THE NOSE AND THROAT.

BY LEONARD HILL, M.B. LOND., F.R.S.,
PROFESSOR OF PHYSIOLOGY, LONDON HOSPITAL MEDICAL SCHOOL;
AND
FRANCIS F. MUECKE, M.B., B.S. ADELAIDE, F.R.C.S. ENG.,
ASSISTANT SURGEON, LONDON THROAT HOSPITAL, ETC.

*(With Coloured Illustrations.)**

IN order to try and throw some light on the causation of infection with influenza and "colds in the head," which becomes rampant in the winter and particularly under conditions of cold moist atmosphere, we have investigated the conditions which pertain to the mucous membrane of the nose and throat under various atmospheric conditions. Using a mirror and speculum, we have found that the mucous membrane flushes and swells, becoming turgid with blood and tissue lymph and covered with a thick secretion, when the subjects are confined in a warm moist atmosphere—e.g., 80° F. (See coloured plate.) At the same time the air-way is narrowed and even choked up in those who have a deflected septum. The mucous membrane of the nose and throat, just as the skin, is flushed with blood, and pours out secretion in order to cool the body. After passing from the warm to a cold atmosphere we find the mucous membrane quickly becomes paler owing to constriction of the blood-vessels, but still remains swollen with tissue lymph, as is shown by its appearance and by the fact that it pits deeply when touched with a probe.

The altered conditions seem to us to be such as may increase the liability to infection. In a warm crowded room the swollen mucous membrane of the nose of an individual, covered, as it is, with thick secretion, will be massively infected with bacteria explosively sprayed out by the other occupants who sneeze, cough, and speak in the room. On passing out into the cold, misty, outside air the blood-vessels constrict, and at the same time the nose is chilled by the greater conduction of heat, due to the cold particles of water in the inspired air. The defensive mechanisms of the blood, the immunising properties of the plasma, the cleansing action of the ciliated epithelium, and phagocytic action of the white corpuscles are diminished by the low temperature, while the pathogenic bacteria find a suitable nidus for their growth in the secretion and tissue-lymph of the swollen mucous membrane. The immunity to "colds" of those who live an open-air life is well known. Massive infection does not occur, and so long as they are exposed to the cold outside air the mucous membrane, like the skin, remains pale and taut, moistened with a scanty secretion.

Apart from the general question of health and immunity we believe it is the massive direct transmission of bacteria from one to another in warm confined atmospheres, and the subsequent exposure to the cold, moist outer air which together contribute to the infection of the susceptible individuals. We can lessen our liability to such infection by keeping the air of our rooms and crowded meeting-places cool and moving. We find that a fan set to whirl the air in our experimental chamber will keep the nose paler and drier and the air-way patent even when the air is heated to 100° dry and 83° F. wet bulb. Keeping the air in motion in crowded rooms by means of fans will not only keep the mucous membrane in better state, but also diminish the massiveness of the direct infection from mouth to mouth or nose to nose. We find that warm, dry air flushes the mucous membrane with blood, but produces less swelling and secretion than warm, moist air does. We find also that while convection heat, e.g., from an anthracite stove flushes and swells the nasal mucous membrane, radiant heat, e.g., from a modern gas fire causes sweating from the skin and does not affect the nose. The cause of the headache and stuffiness felt in rooms heated by steam pipes, stoves, and hot air is due, we believe, to the swelling of the mucous membrane of the nose and its air sinuses. We find the change from convected heat to radiant heat relieves the stuffy feelings, and at the same time causes the skin to become moist and the nose to return to the normal "out-of-door" appearance.

As to the question of massive infection, this may be lessened greatly by inculcating the doctrine that those infected with "colds" and in the acute stage must sneeze and cough into handkerchiefs, and even speak with a paper held in front of the face. Or we can when interviewing those so infected protect ourselves from "spray" by holding a newspaper in front of our mouth and nose. If habits of this nature were established at the schools great relief might be obtained from the present widespread discomfort and danger of epidemics of "colds."

* For description of coloured plate see p. 1290.

THREE CASES OF

SYMMETRICAL NECROSIS OF THE CORTEX OF THE KIDNEYS

ASSOCIATED WITH PUERPERAL ECLAMPSIA AND SUPPRESSION OF URINE.[1]

BY ROBERT JARDINE, M.D. EDIN.,
PROFESSOR OF MIDWIFERY, ST. MUNGO'S COLLEGE, GLASGOW; OBSTETRIC PHYSICIAN TO THE GLASGOW MATERNITY AND WOMEN'S HOSPITAL;
AND
ALEX. MILLS KENNEDY, M.D. GLASG.,
SENIOR ASSISTANT PATHOLOGIST TO THE GLASGOW ROYAL INFIRMARY; PATHOLOGIST TO THE GLASGOW MATERNITY AND WOMEN'S HOSPITAL; ASSISTANT TO THE ST. MUNGO (NOTMAN) PROFESSOR OF PATHOLOGY, GLASGOW UNIVERSITY.

*(With Coloured Illustrations.)**

ON May 9th, 1906, I read before this society a paper entitled "Eclampsia during Pregnancy; Death from Suppression of Urine; Extensive Infarction of Both Kidneys," and exhibited the kidneys and microscopic sections.[2] In 1911, in conjunction with Dr. J. H. Teacher, I published full notes of this case, and of a second one which I had treated in January, 1907.[3] Since then I have seen four more cases, three of which I have had under my own care. One of these I saw in consultation in the country, but I was unable to obtain the kidneys. The other case I saw under the care of my colleague, Professor Murdoch Cameron, and I am indebted to him for permission to publish it along with my own. When Teacher and I published our two cases in 1911, we could only find records of about half a dozen somewhat similar cases. So far as we could discover, the first case had been published by Rose Bradford and Lawrence in 1898. Griffith and Herringham, H. C. Lloyd and Klotz, have also published cases, but I am not aware of any others. The condition is certainly a rare one, but apparently it has fallen to my lot to have seen more than any other observer.

I shall give the clinical notes of the cases, not taking them in the order of admission, but beginning with the one in which the suppression of urine lasted longest, and working down the scale.

CASE 1.—The patient, a married woman, aged 34, ix.-gravida, was admitted to the Glasgow Maternity and Women's Hospital under my care on May 21st, 1910, at 10.40 P.M., suffering from concealed accidental hæmorrhage. Seven of her previous labours had been at full time, all instrumental, and the last had been a premature one at the sixth month. The present pregnancy was advanced to the seventh month. For two weeks previous to admission the patient's legs had been swollen, and for one week she had complained of pain across the upper part of the womb, and had felt very weak and ill. About five hours before admission the pain in the abdomen had become much worse, and a vaginal discharge of blood-stained fluid had commenced.

General condition on admission.—The patient was extremely blanched, with a very thready pulse of 140, which at times was almost imperceptible. There was marked œdema of the legs and abdominal wall, and moist râles were heard all over the bases of the lungs. No cardiac murmurs could be detected. The tongue was furred, and the breath very foul. The uterus was globular in shape, very distended, and tender. No fœtal parts could be felt, and no heart sounds were audible. The os was the size of half-a-crown, but the cervix was not fully taken up. The vertex presented, and there were no forewaters. On passing a catheter the bladder was found to be empty. The patient stated that she had not passed any urine since the morning. The diagonal conjugate was slightly over 3½ inches.

The patient was so ill that I was quite sure that immediate delivery

* For description of coloured plate see p. 1290.

[1] A paper read before the Edinburgh Obstetrical Society on Feb. 12th, 1913.

[2] Transactions of the Edinburgh Obstetrical Society, vol. xxxi.

[3] Journal of Pathology and Bacteriology, vol. xv., 1911.

would be fatal, so I decided to try saline infusion and free stimulation, with strychnine and digitalin hypodermically and brandy by the mouth. The uterus was so tense that it did not seem likely that any further hæmorrhage could occur into it. Fortunately there was a quick response to the stimulation, and in about three hours a dead 3½ lb. fœtus was delivered spontaneously. The placenta, which was very unhealthy, and a very large amount of clot were expressed from the uterus. The chorion was partly adherent and had to be removed. The uterus was douched out with lysol solution at 120° F. and firmly packed with iodoform gauze to prevent any further oozing.

The patient rallied after delivery, and next day her pulse was from 116 to 120. The uterine packing was removed and there was no bleeding. No urine was excreted.

On the following day (the 23rd) the patient looked well, and her pulse was good, but the suppression of urine was still complete. The bowels were freely moved by magnesium sulphate. The loins were cupped and poulticed, and a half-pint of saline solution was given by the rectum, four-hourly. The patient was also given as much fluid by the mouth as she could be got to drink. The skin and bowels acted well. She was very comfortable, and the only thing she suffered from was an occasional attack of dyspnœa. She seemed to think that we were concerning ourselves unnecessarily about her.

Next day (24th) no urine was passed. A urinous odour was quite perceptible from the patient's skin. She was quite conscious, and did not seem to be suffering, except from occasional attacks of dyspnœa.

On the 25th the suppression of urine was still complete. The patient was quite conscious, and apparently not suffering any inconvenience, except from the occasional attacks of dyspnœa. Towards evening these attacks became more frequent, but there were no convulsions, nor any period of what might be called coma. Death occurred at 11.20 P.M.

This patient was admitted on May 21st at 10.40 P.M., and she died on the 25th at 11.20 P.M., so she was in the hospital a little over four days, during which time the suppression of urine was complete. According to her own statement, the last time she had passed urine was on the morning of the day of admission, and as she was admitted to the hospital at 10.40 P.M., we may take it that complete suppression had commenced 12 hours before admission, so it must have lasted at least four and a half days.

In this case there were no convulsions, and it may be asked why it is included with other cases of eclampsia. While it is quite true that in the great majority of cases of eclampsia convulsions are present, there are a number of cases in which the patients show all the indications of eclampsia except convulsions. I have seen a number of these which have recovered, but quite recently I had one which died, and at the post-mortem examination, which was done by Dr. Kennedy, the typical lesions of eclampsia were found in the liver and kidneys. Dr. Kennedy had no hesitation in pronouncing the case one of eclampsia. It is possible that the great loss of blood had prevented the occurrence of fits in this case, and as Dr. Kennedy found the lesions of eclampsia present we have concluded that the case was really one of eclampsia, although no fits had occurred.

CASE 2.—The patient, a married woman, aged 38, ii.-gravida, was admitted under my care on Jan. 25th, 1910, at 9.40 P.M., suffering from œdema and bad albuminuria. Her first pregnancy had ended in a miscarriage in January, 1909. The present pregnancy had begun in May, 1909. Swelling of her legs and feet had been present for about six months. There were considerable anæmia and some bronchitis. The uterus was much distended with a twin pregnancy. Both fœtuses were alive. The os was the size of a shilling and the cervix taken up. The urine was loaded with albumin, and pus cells and granular casts were present.

Next day (26th) the labour ended spontaneously by the birth of live female twins, 4 lb. and 4½ lb. in weight. At this time the patient's pulse was 88 and the temperature normal. There was nothing to point to anything being wrong except some nephritis, which we expected to clear up now that the labour was over.

On the 27th the temperature was still normal, but the pulse-rate varied between 100 and 130. The patient's face had become œdematous, and there was persistent vomiting. Only one ounce of urine was excreted in the 24 hours.

On the 28th the patient was semi-comatose. One ounce of urine was excreted.

On the 29th the patient had a convulsion, and died in the fit at 2.30 A.M. This was the only fit. The suppression of urine had lasted about two and a half days.

The treatment adopted was free purgation, salines by infusion and by the rectum, and free stimulation.

In this case it may also be urged that, as the only convulsion occurred immediately before death, it was not a case of eclampsia, but one of uræmia. From the clinical point of view I had diagnosed the case as one of eclampsia, and the post-mortem findings confirmed this diagnosis.

CASE 3.—The patient, a married woman aged 23, i.-gravida, was admitted under the care of Professor M. Cameron on Dec. 12th, 1909. The history was that the patient's face had been swollen for some weeks, and that on the day before admission she had had vomiting, severe headache, and failure of vision. At 9 A.M. on the day of admission she had become somewhat comatose, and an hour or two later she had had a fit, followed by several others.

On admission the patient was not deeply comatose, but she had a fit shortly afterwards. She was anæmic in appearance, but not markedly œdematous. Her lungs were clear, and the heart sounds normal. The urine contained so much albumin that it became solid on boiling. The fundus of the uterus was below the umbilicus. According to her dates, the pregnancy had advanced four and a half months.

The treatment adopted was to empty the uterus and to infuse two pints of saline solution under the breasts. The stomach was also washed out, and a large dose of magnesium sulphate with 40 grains of bromide and 20 of chloral hydrate was given through the stomach-tube. After the effects of the chloroform had passed off the patient became quite conscious. There were no more fits, and for two days she kept well, and passed a fair quantity of urine, but it was impossible to estimate the amount on account of the free purgation.

On the 15th she began to vomit blood, and complained of pain in the epigastrium, and she was troubled with hiccough. On the 16th tarry stools were passed and she was still vomiting blood-stained fluid. On the 17th the vomiting had ceased, but the hiccough still persisted. The urine was now becoming scanty in amount. There was some abdominal distension and tenderness over the stomach. On the 18th the abdomen was still distended and tender. No urine was passed. This was the first day of complete suppression.

The patient died on the 19th at 10.15 A.M. No urine had been passed. The complete suppression had been under two days in duration. There were no fits immediately before death. Eclampsia at such an early stage in pregnancy is extremely rare. In my experience of several hundred cases I have only seen one other at such an early stage.

In the first of the two cases I have already recorded there had been complete suppression of urine for five and a half days. In the second one the suppression never was complete, but during the nine days the patient was in hospital 12 oz. and 8 oz. of urine were secreted on the first and second days, and after that the amount varied from ½ oz. to 3 oz. In this case the patient's face and hands showed a condition not unlike Raynaud's disease. In no other case has this condition been observed. I mention this, because Teacher looks upon spasms of the vessels as probably the determining cause of the thrombosis.

In the cases just recorded the suppression lasted for four and a half, two and a half, and one and a half days; so it gives a series, and the condition can be studied in various stages, but Dr. Kennedy will deal with that in his report.

It will be noticed that none of the cases had gone to full time, and in Case 3 the pregnancy had only lasted four and a half months. This was the only case in which there was any operative interference in regard to the delivery. Case 2 was the only one in which a live child was born. It was a case of twins.

In the case which Griffith and Herringham reported, entitled "A Case of Necrosis of the Entire Renal Cortex of Both Kidneys, together with Thrombosis of all the Cortical Arteries, occurring in the Puerperal State," the patient had had no fits, but she had suffered from chronic renal disease for several years. She had had complete suppression of urine for the last six days of her life, and had only secreted 10 fluid ounces during the three days previous to the onset of complete suppression. There was only a trace of albumin in her urine and some tube-casts. In Rose Bradford and Lawrence's case the suppression had lasted seven days. There had been no fits. In both of these cases the kidney condition was practically identical with the condition present in all of my advanced cases.

All of these observers have drawn attention to the fact that no uræmic signs or symptoms were manifested. This was true of my two cases previously reported. In the present series, in Case 1 the patient suffered from attacks of dyspnœa, which is sometimes seen in uræmia, but she was so anæmic from the great loss of blood that the attacks may have been due to anæmia. In Case 2 there was persistent vomiting, and the patient became semi-comatose fully 24 hours before death. She also had a fit, in which she died. No other indications of uræmia were present. The patient in Case 3 also had vomiting and hiccough. The vomiting ceased two days before death, but the hiccough persisted. While I cannot say that there were no indications of uræmia in these cases, I think I am justified in stating that what indications there were were very slight, and not what one would expect in fatal cases. This is a very striking feature, but the explanation of it is not easy.

So far as one can see, these cases are hopeless, as no treatment can be expected to renew the cortex of the kidney where it has been destroyed. Unfortunately, both kidneys seem always to be affected. Decapsulation is useless. In my first case it was done in one kidney, but, of course, it did no good.

I am deeply indebted to Dr. Teacher and Dr. Kennedy for the great amount of work they have done in the investigation of these cases. I think it is to the pathologist we must look for light upon this obscure subject, and I trust that they may be able to help us.

Pathological Record of Cases by Dr. Kennedy.

CASE 1.—The body is that of a well-developed and well-nourished woman. It is anæmic-looking, and there is œdema of the legs.

Head.—The calvarium is thicker than usual. There is some œdema of the soft membranes, and a slight excess of fluid in the lateral ventricles, but nothing further abnormal is to be found in the brain. The cerebral vessels are healthy, and there is no thrombosis in any of the sinuses.

Thorax.—There is an excess of clear serous fluid in the pericardial sac. The heart is slightly dilated, and its muscle soft and anæmic looking. The valves are healthy. Large agonal thrombi are present in the right ventricle and right auricle and the adjoining inferior vena cava. Some clear fluid is present in both pleural sacs, and a number of old adhesions over both lungs behind. The lungs are very œdematous, but show nothing else abnormal.

Abdomen.—About a pint of clear serous fluid is present in this cavity, but no blood.

The *liver* is considerably enlarged and appears fatty. There are no hæmorrhages visible under the capsule or in its substance, but there are a number of very minute pale whitish areas throughout.

The *uterus* shows evidence of recent delivery, and in its upper right-hand corner the wall is very thin, and the peritoneum over this area is congested.

With the exception of the kidneys, the other abdominal organs are healthy.

Kidneys.—Both kidneys are enlarged and show similar characteristics. The left kidney weighs 9¼ oz. and the right 8¼ oz. The capsules are non-adherent, and the surfaces are fairly smooth except for traces of the fœtal lobulation. The surfaces generally are opaque and pale yellowish-white, but are mottled all over with small reddish areas. On section the relative thickness of cortex and medulla is about normal. The outer two-thirds of the cortex is dull opaque and pale yellowish-white in colour and apparently completely necrosed. The innermost third of the cortex is apparently living tissue, and is well demarcated off from the necrosed outer two-thirds by a distinct hæmorrhagic zone. At intervals from this zone of congestion small strands of congestion pass into the outer necrosed area, and reaching the surface constitute the reddish mottled areas visible under the capsule. The necrosed area is not confined to the peripheral cortex, but extends into the interpyramidal portion, and everywhere is limited internally by the hæmorrhagic zone, the relations being the same throughout, and a narrow area of apparently normal cortex lying immediately next the medulla. At no place can any living tissue be traced passing from the medulla outwards to the surface. The arteriæ rectæ look congested. The renal arteries are not apparently thickened nor thrombosed, and the pelves and ureters are normal.

The appearances are those of an uniform symmetrical pale infarction of the outer two-thirds of the cortex of the kidneys.

Microscopic examination.—Sections were prepared from several portions of the kidney and mounted in short series. The broad layer of necrosis is very regular and uniform in thickness, but the extent of the necrosis is even greater than seemed to be the case from the naked-eye appearances of the organ, there being only a very narrow zone of living cortical tissue next the medulla, and most of the zone which appeared to be only congested is really necrotic. At the surface immediately under the capsule there is an extremely narrow layer of living cortex, which, however, is not quite uniform. It is broken up at places by the necrosis extending right up to the surface, and at other places it extends slightly deeper into the kidney as small wedge-shaped areas, in which the parenchymatous elements are separated by what appears to be a kind of œdematous condition of the interstitial supporting tissue. At no place is there any living tissue connecting the medulla with the surface.

So far as can be judged the kidney appears to have been quite a healthy organ. There is no excess of interstitial connective tissue and no sclerosis of glomeruli or arteries.

In the infarcted area all the structures are in a state of necrosis which is almost complete, the cells having become broken up and the nuclei in the vast majority having disappeared altogether. The outlines of the tubules and glomeruli, however, are still quite distinct. The greater part of the infarcted area shows coagulation necrosis without any sign of reaction, except in certain places where there is very marked infiltration by polymorphonuclear leucocytes. In the necrosed area a short distance from the surface of the kidney there is a more or less distinct zone of leucocytic infiltration. This infiltration, while not very dense, is found in the interstitial tissue around the tubules and glomeruli, and only rarely are any polymorphs present within the tubules. Patches of similar infiltration are also present in the deeper parts of the necrotic area bordering on the healthy tissue, and occasionally patches are found superficially in the medullary part. There are none in the deeper parts of the medulla. In those places in the infarcted area where the leucocytic infiltration is most dense the renal tissue is seen to be reduced to a granular matrix, the outlines of the tubules having completely disappeared and many of the leucocytes also being degenerate.

In the marginal zone there is much congestion and some hæmorrhage. Many of the glomeruli are gorged with blood. As observed by the naked eye, strands of congestion can be traced at intervals passing to the surface, where they form patches of congestion under the capsule.

All the cortical blood-vessels are occupied by dense, firm, amorphous thrombi. The thrombosis affects both arteries and veins, and is practically coextensive with the infarcted zone. It does not extend beyond the marginal zone nor into the medulla, and the vascular arches are quite free. The walls and contents of the thinner thrombosed vessels are completely necrosed, whereas the walls of the thicker are partially so. A slight infiltration by polymorphonuclear leucocytes is seen in the walls of some of the latter, but around them there is fairly intense leucocytic reaction, and in some places hæmorrhagic extravasation also. The thrombosed portions of the vessels are much dilated. The thrombi in the greater part of their extent are dense and of the white amorphous type, but at their proximal ends they show a mixed character.

CASE 2.—The body is well developed and well nourished. There is slight general anasarca. The face has a slightly jaundiced appearance.

Head.—Brain and membranes are healthy.

Thorax.—There is an excess of serous fluid in the pericardial sac.

Heart.—Slightly fatty and rather soft, but no valvular lesions are present. There are agonal thrombi in right auricle and right ventricle extending into the pulmonary artery, and also lying in the commencement of the aorta.

Lungs.—There is a small quantity of clear fluid in each pleural sac and a few old adhesions over right lung. Both lungs show marked œdema.

Abdomen.—Contains a considerable quantity of clear fluid.

The *liver* weighs 54½ oz.; it is fatty, and shows throughout a number of pale areas each about the size of a pea. A few of these show minute hæmorrhagic streaks in them. On *microscopic examination* these areas are seen to be due to necrosis of liver cells in foci situated at the periphery of the lobules in the portal regions. (Fig 4.) In these foci the liver cells are granular, and stain less deeply than normal. The nuclei also show loss of staining, and in the centre of the foci even the outlines of the cells are obscured. The hæmorrhagic streaks seen in some are due to capillary congestion, but there is no thrombosis. There are also a great many more similar foci of necrosis throughout the liver, but they are microscopic in size. No leucocytes are present in these necrotic foci.

Intestine.—The duodenum and upper two-thirds of the jejunum show a number of petechial hæmorrhagic spots in the submucosa, more numerous towards the upper end of the bowel. On *microscopic examination* these are seen to be greatly dilated thrombosed vessels in the submucosa. The thrombus consists of red blood corpuscles and fibrin, and

FIG. 3.

Micro-photograph (× 90) of kidney from Case 3. (1½-2 days' complete suppression of urine.) Showing necrotic patch in the outer two-thirds of the cortex. Within the patch all the structures are in a more or less necrotic state. There is widespread degeneration of the tubular epithelium with loss of nuclear staining, although the outlines of the tubules are still visible. A necrotic glomerulus, a congested and partly necrotic one, and a healthy glomerulus are seen.

is evidently of recent formation. In places the mucous membrane in the immediate neighbourhood appears necrotic. The bowel otherwise and the *stomach* are healthy.

The *spleen* is somewhat enlarged and its pulp soft, but with the exception of the kidneys the other abdominal organs are healthy.

Kidneys.—The kidneys in this case are about normal in size, the right weighs 7 oz. and the left 5 oz., and both show similar characteristics. The capsules are non-adherent and the surfaces smooth. The surfaces generally are opaque and pale yellowish in colour, but they appear to be less pale than in the first case. They are mottled all over with small reddish hæmorrhagic areas, which are more numerous and a trifle larger than those seen in the first case, and show apparently a greater degree of congestion. On section the relative thickness of cortex and medulla is about normal. (See coloured plate, Fig. 2.) The outer two-thirds of the cortex is well demarcated off from the inner third by a distinct hæmorrhagic zone, and from this latter strands of congestion pass outwards to the surface. These hæmorrhagic strands are much more numerous than in the kidney from the first case, and in places give to the cut surface of the cortex a distinctly mottled appearance. Between the areas of congestion the outer two-thirds of the cortex is pale yellowish in colour and apparently completely necrosed, and the inner third appears to be living tissue. As in the first case, the necrosed area extends into the interpyramidal portion, being everywhere bounded internally by the hæmorrhagic zone, with the layer of apparently living cortex still deeper. The interpyramidal portion of necrosed cortex is also interrupted by strands of congestion more numerous than in the

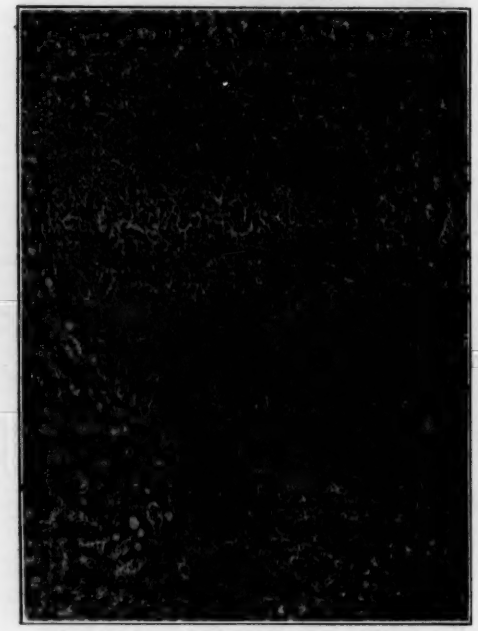
first case. There is apparently no passage of living tissue from the medulla to the surface.

The renal arteries are not apparently thickened nor thrombosed, and the pelves and ureters are normal.

Microscopical examination.—Sections were prepared from several portions of the kidney and mounted in short series. As in the previous case, the broad layer of necrosis is fairly regular in thickness, and while its extent is probably somewhat greater than appeared to the naked eye, there is quite a distinct zone of living cortical tissue next the medulla, which at intervals projects outwards a short distance. At the surface immediately under the capsule there is also an extremely narrow layer of living cortex which, as before, is not quite uniform, showing wedge-shaped areas dipping down into the cortex. In these wedge-shaped areas the parenchymatous elements are not separated by any œdematous-like condition of the supporting stroma, as seen in the first case.

The kidney in the present case also appears to have been quite healthy, there being no excess of interstitial tissue and no sclerosis of glomeruli or arteries. In the infarcted area all the structures are in a more or less necrotic state. The outlines of the tubules are still distinct, but there is widespread degeneration of their epithelium, which is granular and broken-down, and shows loss of nuclear staining. Occasionally tubules are seen in which the nuclear staining is well preserved, the cells themselves being granular, with some fraying of their margins, and partly desquamated. Although the degeneration

FIG. 4.



Micro-photograph (× 90) of liver from Case 2. (2½ days suppression of urine.) Showing "focal necrosis." The focus is situated at the periphery of the lobules, and in it the liver cells are granular and stain less deeply than normal. The nuclei also show loss of staining and in the centre of the focus even the outlines of the cells are obscured.

of the tubular epithelium on the whole is considerable, it appears to be less advanced than in the first case. A greater difference, however, is evident in the glomeruli. Here the degenerative changes are distinctly less advanced. In the first case, the nuclear staining in the great majority of the glomeruli was almost completely lost, but in the present case nuclear staining is quite distinct in most, although the cell bodies are swollen and granular, with loss of outline, and some of them vacuolated. In the necrosed area, a short distance from the surface, and again in its deeper parts, there are a few scattered patches of polymorphonuclear leucocytes infiltrating between some of the tubules, but they are exceedingly scanty, and by no means so evident as in the first case.

In the marginal zone there is congestion with occasional hæmorrhage, and many of the glomeruli are gorged with blood. Similar areas of congestion are present at the surface, and occasional strands of congestion are seen passing through the cortex. The areas of congestion in the marginal zone are not so large as those in the first case.

The cortical blood-vessels show a similar condition to that present in the previous case; they are dilated, and filled with dense firm amorphous thrombi which do not extend beyond the necrotic margin. The thrombosis, however, is less widespread, as many of the capillaries and minute arterioles can be seen engorged with blood and free from thrombosis. These congested capillaries can in many cases be traced into the engorged glomeruli. As in the previous case, the walls and contents of the thinner thrombosed vessels are necrosed, and the walls of the thicker are partially so. A very slight infiltration by polymorphonuclear leucocytes is frequently seen around the latter.

CASE 3.—The body is that of a well-developed and well-nourished young woman. There is slight œdema of the feet.

Thorax.—The pericardium is healthy; the *heart* and its valves are healthy, and no thrombi are present. The *lungs* show œdema only.

Abdomen.—Contains about two pints of clear fluid. All the abdominal organs except the liver and kidneys are healthy. The large bowel is filled with dark greenish (bile-stained) fæces.

The *liver* weighs 50 oz. It shows diffuse fatty infiltration with slight icteric pigmentation. The right lobe is covered with rather purplish-coloured small patches suggestive of dilated veins. These are situated beneath the capsule, and are rather depressed, but also occur in the substance of this lobe. On *microscopic examination* these purplish areas are seen to be composed of greatly congested capillaries in the midst of groups of necrotic liver cells. The liver cells in these areas apparently undergo swelling and vacuolation, becoming much enlarged and foam-like, with loss of nuclear staining, eventually becoming more or less shrivelled, with only the outlines and some stroma being visible. There is no infiltration by leucocytes in these necrotic foci which are situated in the portal areas. The cells in the neighbourhood of the majority of the portal tracts show some degree of degeneration, becoming swollen, vacuolated and granular, with loss of nuclear staining. No thrombosis is visible.

Kidneys.—Both kidneys show similar characteristics; the left weighs 7½ oz. and the right 8¼ oz. The capsules are non-adherent, and the surfaces of the kidneys are roughly granular all over. This irregularity of the surface is seen to be due to numerous opaque yellowish prominences and darker red hæmorrhagic depressions. The surfaces have in consequence a uniformly mottled appearance all over, which gives them a much more striking appearance than the kidneys from either of the two preceding cases. On section the cortex in both looks a little thicker than normal (see coloured plate, Fig. 1); it is extensively mottled with reddish and yellow areas, the red areas apparently being due to congestion and hæmorrhage, while many of the yellow areas seem like small anæmic infarcts. The mottled part does not include the whole cortex but only the outer two-thirds, the inner third appearing as a fairly regular yellowish zone throughout. The mottled necrosed tissue extends into the inter-pyramidal cortex, and is also bounded internally by the zone of apparently living cortex. Only a suggestion of a distinct hæmorrhagic zone between the inner third and the outer two-thirds of the cortex can be discerned. The arteriæ rectæ are congested. The renal arteries are not apparently thickened nor thrombosed, and the pelves and ureters are normal.

Microscopical examination.—Sections were prepared from several portions of the kidney and mounted in short series. As before, there is a fairly regular zone of living cortical tissue next the medulla, which is broader and more easily followed than in the two preceding cases, and frequently passes outwards in accordance with the patchy nature of the necrosis. The outer two-thirds of the cortex is everywhere interrupted by patches of necrosis of varying size. (Fig. 3.) Within these patches all the structures are in a more or less necrotic state; there is widespread degeneration of the tubular epithelium, with loss of nuclear staining, although the outlines of the tubules are still visible. Around these areas there is intense congestion; sometimes dilated and intensely congested capillaries pass inwards for some distance into the patches, and occasionally there is some hæmorrhage. In places there is slight polymorphonuclear leucocytic infiltration between the tubules at the periphery of the patches.

The changes in the glomeruli vary with their position. When present in the middle of the necrotic patches they are then completely necrosed, being only recognisable by their faint outlines. When seen at the margins of the patches they are then usually partly necrotic and congested; when in the immediate neighbourhood they are often seen simply gorged with blood. Away from the patches they appear quite healthy.

Thrombosis of the cortical blood-vessels in this case is conspicuous by its extreme infrequency. In a few of the necrotic areas capillaries are found occupied by amorphous thrombi, and then their walls also are rather obscured by necrosis, but only rarely are any of the minutest arterioles found thrombosed. This forms a striking contrast to the two preceding cases, in which thrombosis was conspicuous and extended into almost all the cortical vessels above the vascular arches.

The kidneys otherwise appear to have been fairly healthy. There is apparently a marked cloudy swelling of the tubular epithelium, but no excess of interstitial tissue and no sclerosis of glomeruli or arteries.

Summary and Commentary by Dr. Kennedy.

Case 1, 4½ days' suppression of urine. Case 2, 2½ days' suppression of urine. Case 3, 1½ to 2 days' suppression of urine.

The kidneys, which appeared to have been healthy organs, are in each case the seat of symmetrical necroses of the cortex. The necrosis is more or less limited to the outer two-thirds of the cortex, and in degree it corresponds in each case with the duration of the suppression of urine. In the two older cases the necrosis is more or less uniform, and separated from the living inner third of the cortex by a hæmorrhagic zone, and is more advanced in the older case. There is extensive thrombosis of the cortical blood-vessels, which does not extend beyond the margin of the necrotic area, and does not involve the vascular arches, and which is more widespread in the oldest case. In the earliest case the necrosis is of a very patchy character, and in the neighbourhood of the patches there is intense congestion. Thrombosis of the cortical blood-vessels in this case is conspicuous by its extreme infrequency; in some of the necrotic areas thrombosed capillaries are found, but only rarely are any of the minutest arterioles thrombosed.

The question now arises, How are we going to account for these changes? Is the thrombosis primary and the cell-degeneration secondary? Or is the cell-degeneration primary

and the thrombosis consequent on the autolytic products of the cells, or are both dependent on the same agency? The answering of these questions is by no means a simple matter, and it might almost lead to a discussion on the etiology of eclampsia in general.

Two similar cases of this condition, with suppression of urine of five and a half days and eight days respectively, have previously been reported by Professor Jardine and Professor Teacher. In one there were symptoms of Raynaud's disease, and Professor Teacher holds the opinion that the symmetrical necrosis of the renal cortex is dependent upon spasm of the smaller renal arteries, with consequent thrombosis and anæmic infarction. He bases this opinion chiefly on: (1) the association of Raynaud's phenomena in one case; (2) the symmetrical distribution of the necrosis; and (3) the distribution of the thrombosis in the renal arteries—viz., in the cortical branches from a point frequently just beyond their origin from the arterial arches, and the microscopic and macroscopic characters of the lesion, which are those of anæmic infarction.

As regards the first point we have now seen *six* cases, and it is only in the one that there was any suggestion of Raynaud's condition. This in itself casts doubt upon the association of the two conditions. As regards the symmetrical distribution of the necrosis we know that when the cause is general—e.g., nephritis—the kidneys usually suffer together in their morbid changes. Regarding the third point this may be answered by reference to the third of our present cases. In the two older of our present cases the extent of the thrombosis approaches somewhat that seen in the two cases previously published; but in our *third* case, where the condition is very early, the thrombosis is chiefly in the capillaries and the smallest arterioles in the immediate vicinity of the necrotic patches. In every case the thrombosis is always found in the neighbourhood of the necrotic tissue.

We do not think it can be denied that the cases are all of the same nature, only showing different stages of development; and it seems to me that the thrombosis in the later cases is but an extension of the thrombosis in the capillaries and smallest arterioles.

If, then, the thrombosis starts in the finest branches, what starts it? An almost constant feature of fatal cases of eclampsia is focal necrosis in various organs of the body, but chiefly in the liver, and these are frequently associated with capillary thrombosis. In our three cases at present under discussion, to the naked eye there appeared to be focal necrosis in the livers, and this was confirmed microscopically in two. Capillary thrombosis, however, was *not* apparent, and, in fact, in one—the earliest case—there was great dilatation and congestion of capillaries in the foci.

I am inclined to the view that the cause of the necrosis in the kidneys is the same as that which causes necrosis in the liver, and that the thrombosis in the smaller cortical renal arteries is secondary to the necrosis of the renal cells. What, then, initiates the necrosis? I fear we must fall back upon the explanation that it is the deleterious influences on the cells of the eclamptic toxin, whatever it may really be.

NATIONAL FOOD REFORM ASSOCIATION.—The Second Guildhall School Conference will be held on June 30th and July 1st. The opening session will be devoted to a discussion of papers on the working of the English and Scottish Acts governing the provision of meals for necessitous school children. At the second, the educational aspect of the problem, the meals of country school children and the relation of school and home will be considered. The morning of July 1st will be taken up with a discussion of the teaching in public elementary schools of personal hygiene, food values, catering and cookery, while the concluding session will be devoted to the consideration of diet, cookery and hygiene in day and residential institutions for children and adolescents, both public and philanthropic, including open air and special schools, reformatories, industrial schools, and Poor-law institutions. Among the organisations represented on the committee are the Medical Officers of Schools Association, Infirmary Medical Superintendents Association, British Medical Association, and British Dental Association. Particulars will be sent, on receipt of a stamped addressed envelope, by the Secretary, National Food Reform Association, 178, St. Stephen's House, Westminster.

ALIMENTARY TOXÆMIA.[1]

BY W. E. DIXON, F.R.S., M.A. CANTAB., M.D., B.SC. LOND.,

PROFESSOR OF MATERIA MEDICA AND PHARMACOLOGY, KING'S COLLEGE, LONDON.

THE term "toxin" in modern times has come to mean a poison which when injected into an animal gives rise to antibody formation, but alimentary toxæmia includes poisons of a much wider group than these. Now it is by no means certain that true toxins are absorbed from the intact mucous membrane of the alimentary canal. We know, for example, that abrin and ricin can be taken with impunity by the mouth, though in doses of about 1/25 mgm. per kilogramme of body weight the former is poisonous when injected. Large doses of tuberculin can be given by the mouth to tuberculous calves without eliciting a reaction, though a minute dose under the skin at once produces the typical tuberculin reaction. In the same way snake venom, diphtheria and tetanus toxins are harmless when taken by the mouth. This general rule, however, may have some exceptions, and it is known that in certain people, after they have partaken freely of eggs, such complicated substances as egg albumin may find their way into the urine. In general, however, I think it may be accepted that alimentary toxæmia is poisoning produced not by "toxins," the term being used in its strict sense, but by relatively simple chemical substances certainly not of a more complex chemical nature than many of the alkaloids we are in the habit of administering.

These poisons must originate as a result of digestion or putrefaction of food, and our attention may be concentrated almost entirely on the digestion of the proteins. It is true that under certain conditions a kind of toxæmia may be induced from carbohydrate metabolism; for example, in certain conditions of the bowel an excess of lactic acid may be found leading to an excess of ammonium salts in the urine and some four or five times the normal excretion of calcium; the result may be calcium starvation, of which one symptom is probably joint trouble.

When the protein molecule is broken down by the action of acids, alkalies, or by digestive ferments, amino-acids are ultimately produced, and it is in this form that proteins are absorbed, and it is known that the administration of the final cleavage products of an artificial sterile pancreatic digestion will serve to preserve nitrogenous equilibrium in an animal, as well as the administration of intact proteins. These amino-acids, of which a considerable number are known and which vary in kind with the proteins from which they are formed, are then non-poisonous substances and, so far as we are aware, do not give rise to evil results in the animal body. Under the influence of putrefactive organisms these amino-acids may, however, be slightly altered in composition and become toxic. It is not necessarily true, however, that bacteria are out of place in the alimentary canal. It is much more probable that many of them may exert a beneficent effect on digestion and are living in symbiosis. We, for example, possess no ferment in the alimentary canal which will act upon cellulose, but bacteria can hydrolyse it and so assist our digestion. Or to refer to another of their beneficent functions, the case of lecithin may be mentioned, which is broken up by the pancreatic juice into glycero-phosphoric acid, fatty acids, and choline; the last substance if absorbed in quantity might well induce certain toxic effects, but bacterial enzymes break up choline into carbon dioxide, marsh gas, and ammonia, and thus the organism is protected.

I propose to mention only some three or four substances which are known to be formed in putrefaction in the alimentary canal, and will refer first to ammonia. Folin has produced evidence to show that the ammonia which is well known to be present in the portal vein comes from the large intestine as the result of putrefaction, and it has long been recognised that much ammonia may be formed in putrefactive conditions of the bowel.

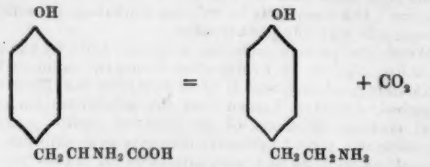
---

[1] A paper read at a special meeting of Fellows of the Royal Society of Medicine on April 14th, 1913.

Rovighi[2] thinks that an excess of ammonia or carbamic acid absorbed from the alimentary canal produces hepatic lesions. His experiments were made on dogs; he injected subcutaneously various aqueous solutions of carbamate of ammonia and obtained an acute intoxication by injecting doses of 0·75 to 1·5 grm., and a chronic intoxication by injecting daily 0·1 to 0·2 grm. The animals lived from 15 to 30 days, and on post-mortem examination showed certain lesions. In acute poisoning marked dilatation of the hepatic capillaries and vacuolation and shrinking of the protoplasm were present. In chronic poisoning the liver was indurated and small; the capillaries, especially the central vein, were dilated, the hepatic cells turgescent, the nucleus stained badly, and some fatty degeneration was present. If the poisoning had lasted a month an increase of connective tissue was observable.

Joannovics[3] produced a like intoxication by administering the carbamate of ammonium by the stomach, a much more convincing method since it is by no means certain that the drug would reach the liver in the same form in which it was put into the stomach. He made two series of experiments on dogs. In the first he obtained subacute poisoning in his animal, using carbamate of ammonium and in the second carbonate of ammonium. His animals lived varying times up to 74 days, during which period they received up to 6·5 grm. carbamate of ammonium. He gives a detailed histological account of the post-mortem effects on the liver, spleen, and kidneys, and states that the effect of ammonium carbonate and carbamate are alike. His results are in agreement with those of Rovighi.

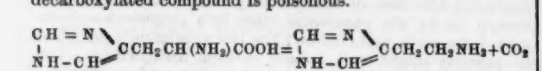
Many of the amino-acids are acted upon in the alimentary canal by micro-organisms and changed to other substances which may cause poisoning of the system either because they are produced and absorbed in great excess or possibly because of some deficiency in the natural protective mechanism. One function of the liver is to destroy such poisonous substances and to render them innocuous, and this may for the time be in abeyance. The simplest method by which the harmless amino-acids are made toxic is by decarboxylation. A few examples will make this clear. Tyrosine may be so changed to p.hydroxy-phenyl-ethylamine or tyramine—



Tyrosine. p.hydroxy-phenyl-ethylamine.

Now tyramine is not formed in a sterile pancreatic digestion, but Barger and Walpole have shown that it can be produced in a medium containing tyrosine which has been inoculated with fæcal bacteria. It is true that Langstein[4] and Emerson[5] believed it could be obtained from tyrosine by digestive ferments alone, but Abderhalden showed that this was not true and that it is formed only by putrefaction.[6] Tyrosine is physiologically inert; tyramine is poisonous.

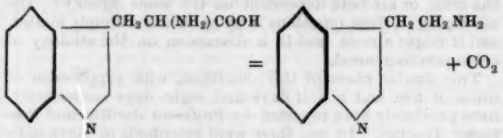
Histidine, though not strictly speaking an amino-acid, is related to them and may be included in the same group. Histidine is a normal product of digestion, but the decarboxylated compound is poisonous.



Histidine. Histidine base.

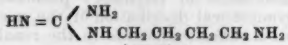
Ackermann[7] obtained a large yield of the poisonous base by submitting histidine to the action of putrefactive organisms.

Tryptophane can also be changed by the agency



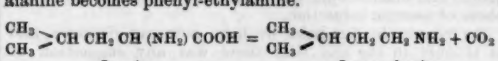
Tryptophane. Indol-ethylamine.

of putrefactive micro-organisms into its corresponding poisonous amine,[8] and agmatine is another active principle obtained from arginine by the loss of carbon-dioxide.

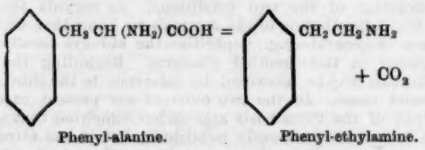


Agmatine.

In the same way leucin becomes iso-amylamine and phenyl-alanine becomes phenyl-ethylamine.



Leucin. Iso-amylamine.

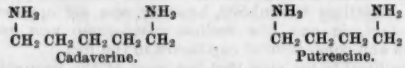


Phenyl-alanine. Phenyl-ethylamine.

But in each case the law holds that the amino-acid is non-poisonous, whilst the base exerts distinct physiological activity.

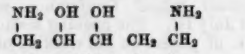
But besides this group of derivatives from amino-acids other compounds more or less poisonous may be produced from amino-acids by putrefactive micro-organisms. Thus indole and scatole, the crystalline volatile compounds which impart the smell to fæces, are formed from the bacterial putrefaction of certain amino-acids of which tryptophane is one. The introduction of tryptophane into the large intestine of the rabbit causes the formation of large quantities of indole and scatole.[9] But the production of these two compounds in a normal alimentary canal requires two factors, (*a*) intestinal sepsis, (*b*) proteins containing the tryptophane group. Gelatine, for example, could give rise to no indole.

Cadaverine and putrescine are other substances derived



Cadaverine. Putrescine.

from putrefaction of the corresponding amino-acids in the bowel (Ellinger). Cresols and phenols are also formed, but bodies of this type are so little poisonous and the body is so well able to protect itself against them that it is doubtful whether their presence is of any great significance from the point of view now under consideration. One of these bodies, however, sepsin, which is usually prepared from putrid yeast or blood, is a violent poison. It is, however, a very unstable substance easily converted into the harmless cadaverine. The formula suggested by Faust is as follows:—



Sepsin or dioxycadaverine.

It may be noted that subsequent observers have not succeeded in preparing this body, and the formula suggested is chemically improbable.

The effect of sepsin may be noted from the following experiment. A large dog was injected intravenously with 20 mgm. of sepsin sulphate. In a few minutes violent vomiting and diarrhœa occurred, and later bloody stools. The dog died in a few hours, and inflammatory changes of a most intense character were found throughout the alimentary canal (Faust).[10] Without entering into this question further it is well to remember that the ingestion of putrid meat may

[2] Ricerche Sperimentale, ii., Morgagni, 1899.
[3] Archives Internationales de Pharmacodynamie et de Therapie, vol. xii., p. 36, 1903.
[4] Beiträge zur Chemischen Physiologie und Pathologie, Band i., p. 507, 1902.
[5] Ibid., p. 501.
[6] Lehrbuch der Physiologischen Chemischen, Berlin, p. 353. 1909. 2 Auflage.
[7] Zeitschrift für Physiologische Chemie, Band lxv., p. 504, 1910.
[8] Laidlaw: Biochemical Journal, vol. vi., p. 150, 1911.
[9] Beiträge zur Chemischen Physiologie und Pathologie, Band v., p. 171, 1903.
[10] Archiv für Experimentelle Pathologie und Pharmakologie, Band li., p. 248, 1904.

give rise to the most violent symptoms as the result of this poison, but it is a substance which is not likely to be formed *de novo* in the intestines, since under the conditions present in the intestines it seems to be converted into cadaverine.

I will now pass to the detailed consideration of the toxic effects of the amino-bases. The immediate action of many of these amino-bases is upon the vascular and muscular system of the body. In 1907 Dr. Taylor and I found that extracts of normal human placenta contained a pressor substance, which was subsequently found to be due to incipient putrefaction. Abelous had previously obtained (1906) from putrid horse-flesh a base with similar properties.[11] Barger and Walpole[12] identified two of these pressor substances with certainty, iso-amylamine and p. hydroxy-phenyl-ethylamine. Both these bases injected into animals have a marked similarity in action to that of adrenalin; their action is restricted to such muscle fibres and gland cells as receive a sympathetic supply, and is of the same nature as that obtained by stimulating the sympathetic nerves to those tissues. Iso-amylamine is not so strictly limited to these structures, since it causes constriction of the pulmonary and coronary vessels, which are for all practical purposes not innervated. Weight for weight the immediate effect of adrenalin is considerably greater than that of either of the other two amino-bases, but the action of the latter is slower in onset, though more prolonged than that of adrenalin. It may be mentioned here that both these bases have been shown to arise as the result of putrefactive changes in the cod's liver, and were constituents of cod liver oil prepared by the old method. Tyramine has also been shown to occur in ripened cheese, being in this case produced from tyrosine by bacterial action in much the same way as it is formed in the alimentary canal. Both these amines differ decidedly from adrenalin in that their action is obtained when they are given by the mouth and also when injected subcutaneously.[13] Indol-ethylamine, when rapidly absorbed, produces a transient stimulant effect on the central nervous system, causing clonic and tonic convulsions, tremors of the limbs, and vaso-constriction with a rise in blood pressure. It has a direct stimulant action on plain muscle which is most marked in the arterioles, the iris, and uterus.[14]

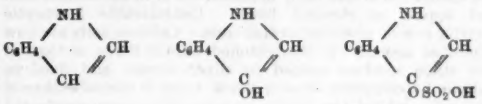
The histidine base which has been investigated by Dale and Laidlaw[15] is different from those so far described. The injection of from 10 to 30 mgm. of this base into the cat causes immediate vomiting and purging, profuse salivation, and laboured respiration, with a subsequent period of collapse and light narcosis. During the narcotic stage the pupils are constricted. The fundamental feature of its action is its direct stimulation of plain muscle by which it produces exaggeration of rhythm with increased tonus; the most responsive plain muscle appears to be the plain muscle of the uterus and the muscular coat of the bronchioles. One curious feature in its action is that it gives rise to a depressor action on the circulation and is probably responsible for the "vaso-dilatin" which Popielski has found in the mucous membrane of the alimentary canal. It causes also a considerable fall in the rectal temperature. In guinea-pigs which possess a thick corrugated bronchiolar mucous membrane this base readily causes death by completely occluding the bronchioles, and a similar death by asphyxia can be produced in cats. It is well recognised that certain cases of morning cough are associated with flatulent dyspepsias; this might be due either to a nervous reflex or be the result of a chemical messenger, and it is conceivable that this histidine base, if produced in excess in the alimentary canal, might, by producing some bronchial constriction, give rise to an effect of this kind.

Among other amines formed by decarboxylation of amino-acids it is only necessary to refer to agmatine from arginine; its action is weak and insignificant, but it causes some contraction of plain muscle when in considerable concentration.

It is probable that putrefaction in the alimentary canal in some degree is a normal process, in which case it would be expected that we should find evidence of these poisons in the urine of normal people. Abelous obtained a pressor base from the urine of normal men which had many of the properties of adrenalin, and to this he gave the name "urohypertensine." Barger and Walpole considered it probable that Abelous's urohypertensine is iso-amylamine, and nearly all the pressor action is due to a substance which is volatile with steam. A second pressor base can be found in the urine after the complete removal of the first with ether; it is probable that this is p. hydroxy-phenyl-ethylamine.[16] Bain has also drawn attention to the fact that in patients suffering from high blood pressure the urine contains little or none of these bases, and he thinks that this indicates that they are retained in the body and play an important part in the production of the high blood pressure. It should be noted that a vegetable diet reduces the amount of these bases found in the urine, and eggs and fish also reduce the quantity to some extent. There is no evidence to show the reason for their absence from the urine when the blood pressure is high. Bain's view may be correct or their destruction may be more complete.

As it is now clear that poisons are normally produced in the alimentary canal from bacterial action and that these are absorbed and excreted, it will be well to note the means which the body takes to protect itself from these poisons, since if no protection existed poisoning would be present perhaps as a normal condition rather than as a rarity. It has been pointed out already that some alkaloids, like choline, may be destroyed in the alimentary canal by micro-organisms, and that others, like sepsin, if formed, would probably be converted almost immediately to the harmless cadaverine. Bodies of the nature of carbolic acid combine with sulphuric acid to form compounds, which can be rapidly excreted and are non-poisonous, and the amount of these aromatic sulphates in the urine for many years has been supposed to indicate the degree of putrefaction going on in the alimentary canal. Benzoic and salicylic acids combine with glycocoll and again form innocuous compounds which are very easily excreted. The resulting salicyluric acid, for example, has no poisonous properties like salicylic acid.

Indole and scatole are oxidised in the body and excreted combined with sulphuric acid, the resulting compounds being



Indole. Indoxyl. Indoxyl sulphuric acid.

without any poisonous effect. Para-hydroxyphenyl-ethylamine, according to Ewins and Laidlaw, is partly oxidised to p. hydroxy-phenyl acetic acid, but much of it disappeared completely and could not be traced.

It has long been known that the liver possessed a remarkable power of destroying toxins and alkaloids. Heger and others showed many years ago that animal tissues possess the power to destroy certain alkaloids. If the tissue juice squeezed out from a frog's liver, and filtered so as to be entirely free from microscopical particles, be mixed with a little hyoscyamine and kept at 22° C. for two or three hours under suitable conditions the alkaloid disappears; both chemical and physiological tests yield negative results. The same effect can be obtained in the rabbit, but it is less marked; the dog's liver, on the contrary, has little or no destructive power. Cloetta, following on these lines, has recently given an explanation of the natural tolerance of rabbits to atropine. Lauder Brunton found that the liver had also considerable power of destroying diphtheria toxin, and in some recent work by Lee and myself we showed that tolerance to nicotine depended on the ability of the tissues to destroy the alkaloid and that destruction occurred mainly in the liver.

Effect of chronic poisoning.—Arterial disease in man may begin either in the intima (atheroma) or in the media, when the change is usually spoken of as arterio-sclerosis. Of the exact causation of these conditions we know little except that poisons, such as syphilis and lead, play a considerable part. Experimental arterial disease in animals has been produced in a great variety of ways. As early as 1889 Gilbert and Lyon showed that injections of bacteria and their toxins produced fibrocalcareous changes, especially if the vessel

[11] Comptes Rendus de la Société de Biologie, vol. i., 1906, pp. 463, 530.
[12] Journal of Physiology, vol. xxxviii., 1909, p. 343.
[13] Dale and Dixon: Journal of Physiology, vol. xxxix., 1909, p. 25.
[14] Laidlaw: Biochemical Journal, vol. vi., 1911, p. 141.
[15] Journal of Physiology, vol. xli., 1910, p. 318, and vol. xliii., 1911, p. 182.
[16] Bain: THE LANCET, April 30th, 1910, p. 1190, and May 27th, 1911, p. 1409.

wall had been mechanically injured. Injury to the vessel has been shown by many to result in severe inflammatory conditions. Josué, in 1903, first drew attention to the action of drugs in producing arterial disease in animals. He injected adrenalin into the veins of rabbits and produced extensive changes in the middle coats of the arteries. In man it has often been shown that the first sign of this form of arterial disease is fatty degeneration, and Klotz has suggested that it is this fatty degeneration which is responsible for the attraction and deposition of calcium salts. In recent years it has been shown by different workers in our Cambridge laboratory that any drug which has the power of considerably raising blood pressure will, when injected into the circulation of healthy animals, bring about degeneration of the middle coat of the arteries. Generally about six injections must be administered before any changes are observed, and the effects occur alike in young and middle-aged animals. It has been shown that digitalis, squill, apocynum, barium, lead, adrenalin, nicotine, and even the inhalation of tobacco smoke will all bring about these changes. Hence it may be concluded that any considerable absorption of pressor bases from the alimentary canal might give rise to this condition.

The last experiments to which I desire to draw your attention are perhaps the most important—namely, the effect of absorbing small doses of those poisons which are produced in the alimentary canal over a prolonged period. Unfortunately the reliable experiments are not many, but still a number of experiments have been made with some of these amino-bases and have produced remarkable results. Harvey[17] has noted typical arterio-sclerotic changes in the vessels from administering p. hydroxy-phenyl-ethylamine to rabbits whether by the mouth or intravenously, and Etienne[18] has observed the same type of effect by using the urohypertensine of Abelous, which, as already pointed out, is probably iso-amylamine.

The plaque formation in the aorta in these cases begins with granular degeneration in muscle fibre. The muscle fibre losing its function tone in the affected portion of the vessel is lost; the blood pressure dilates this somewhat and the elastic fibres lose their crenated form in the middle coat and appear as straight fibres. Considerable leucocytic activity can be observed at this time. Calcium salts are now deposited around the straightened elastic fibres, so that at this stage sections stained in silver nitrate and fixed in sodium hyposulphite show a black band in the substance of the media, whilst the intima may be either quite unaffected or appear a little thickened. The elastic fibres show a normal reaction to elastic stains and do not appear to be in any way affected.

In many of these experiments the heart was found enlarged and exhibited fatty degeneration. In Harvey's experiments the most remarkable changes were found in the kidneys, and these were present both in the experiments in which the drug was injected and those in which it was administered orally. The change consisted in a chronic nephritis showing many similarities to the large white kidney of man. He regards the changes in the kidney as secondary to a vascular sclerosis. The first changes to be produced in such experimental animals are the plaques in the aorta. These are followed or associated with thickening of the walls of the renal arteries, but at this stage without alteration in the glandular substance. Later the reaction of the renal epithelium to stains is impaired and dilatation of some of the tubules and glomeruli becomes evident. This dilatation later may be very marked, and desquamated cells and albuminous material are often observed occupying the dilated lumen; Bowman's capsules are frequently thickened. The tubular epithelium has a ground-glass appearance and the cells are flattened. In more advanced cases round-celled infiltration may be observed round the damaged glomeruli and tubules and freshly formed connective tissue eventually replaces in part the glandular structure. It is a simple matter to produce acute nephritis in animals, but a chronic nephritis of this nature produced by a non-irritant substance is not common and it must be remembered that this may result from the absorption of the amino-base by its natural path, the alimentary canal.

Cambridge.

[17] Journal of Pathology and Bacteriology, vol. xvi., 1911, p. 95.
[18] Journal de Physiologie et de Pathologie Générale, vol. xv., 1913, p. 105.

CHRONIC INTESTINAL STASIS.[1]

BY C. H. FAGGE, M.S. LOND., F.R.C.S. ENG.,
SURGEON TO GUY'S HOSPITAL.

THE purpose of my intervention in this discussion is to support the view for so many years advanced by Mr. Arbuthnot Lane, that in many cases of intestinal toxæmia mechanical factors in the shape of adhesions, bands, or false mesenteries produce kinks with intestinal stasis as their result, and that the operative treatment of these kinks is of the first importance. I have had the unique advantage, which I trust I appreciate, of working in the same wards as Mr. Lane during the past eight years, and during his occasional absence his cases have come under my care. I shall, however, as far as possible speak of opinions gained from my own operative experience, though I must of course admit that the principles on which my opinions are founded have been gathered from Mr. Lane's practice, and that I was led to take interest in the matter by the success which he has achieved in many cases which I have watched throughout.

I do not propose to found any argument or base any conclusions upon analysis of symptoms or X ray evidence after giving bismuth. No one can have much experience of abdominal surgery without realising that the conjuring with probabilities which is known as diagnosis is still largely founded on ignorance, for observation at operations has taught us that symptoms apparently suggestive of disease in one organ are often due to disease in another. Even in the present day physicians are too prone to found theories of abdominal pathology on bedside or post-mortem evidence, and to neglect daily opportunities of correcting their beliefs by witnessing abdominal explorations by their surgical colleagues. In no branch of medicine is Sir Berkeley Moynihan's plea for an investigation of the pathology of the living more necessary than in the study of intestinal stasis. I propose to omit X ray diagnosis because I am not competent to construe its findings, though I must admit that in this class of case the advice of an expert is invaluable and it would be ungenerous not to acknowledge that in nearly every case on which I have operated I have gained help from Dr. A. C. Jordan. In no single case has Dr. Jordan's X ray diagnosis suggested more than I have found at operation, and if I were to grumble it would be that an occasional kink or bound-down ileum has escaped him. I have omitted the above because I want my hearers to understand that my statements and my beliefs are all founded on what I have actually seen during the course of systematic laparotomies, and I may say that except when circumstances were unfavourable I have for several years carried out a thorough routine examination of the parts concerned in this question in every abdomen I have opened for any purpose.

It is fortunate that now the presence of ileal or other bands and kinks is not denied, for there must be many who, like myself, have sufficient personal experience to know that in certain types of case Lane's ileal kink is very commonly met with *if it is systematically looked for*. I have taken most interest in that class of case which is considered before operation to be either duodenal or gastric ulcer, cholecystitis from gall-stones, chronic appendicitis or ileal stasis, or a combination of any or all of these, and I have therefore paid most attention to those bands and kinks which affect the end of the small and the commencement of the large intestine, though, of course, the rest of the colon has shared with the other abdominal viscera in my routine examination.

I am inclined to think that we may divide cases of intestinal stasis into those which involve the lower ileum and often simulate and probably induce gastric and duodenal disease and those which affect the flexures of the colon; the latter, though peculiarly amenable to surgical treatment by short-circuiting, do undoubtedly in many cases get along by the aid of medicinal treatment, and under the head of mucous colitis or constipation lead an active life provided they use purgatives or enemata regularly. In advanced cases both types are found in combination. It is interesting historically to note that in his earlier papers Mr. Lane regarded the large

[1] A paper read at a special meeting of Fellows of the Royal Society of Medicine on April 21st, 1913, being a contribution to the discussion on Alimentary Toxæmia.

intestine to be the chief source of trouble, taking much the same view of its iniquities as we heard expressed in a paper read at last week's discussion from the medical point of view, and it is only in his publications of the last four or five years that Mr. Lane has ascribed the changes in the large to earlier defects in the small bowel.

The harsh antagonism to Mr. Lane's views has now shifted its ground, and it is most interesting to watch the transition from a denial of the actual occurrence of these bands either to a criticism that the evolutionary view of their causation is inaccurate or to an opinion that if their occasional presence be admitted no symptoms can possibly result therefrom. I share with others a difficulty in comprehending and in accepting in their entirety all Mr. Lane's views as to the pathological conditions which he regards as resulting from ileal stasis, but after many opportunities of actually seeing that his diagnoses before operation were found to be substantiated at the operations, I have verified the fundamental observations in so many of my own operations that I am logically bound to admit that when the basis of his work entirely coincides with one's personal observations on the living, there is every probability that Mr. Lane's far-reaching suggestions of etiology and practice may also in course of time prove to be correct.

It is unfortunate that at first the wide question of stasis producing toxæmia was regarded as synonymous with constipation, though this is often but slightly marked in the most toxic patients. It is also to be deplored that Mr. Lane in his earliest papers of 1902 and 1903 did not attach definite names to the abnormal structures he discovered in these patients, for those bands which support the cæcum and ascending colon are now widely known as Jackson's veil, who first described them in 1908, while Lane described and actually figured them in his second paper on this subject.[2]

Discussing first the ileal kink, it may occur in two forms: firstly, as a new flat band passing from the right pelvic margin or from the right (originally the left) surface of the mesentery to the adjacent aspect of the ileal circumference and gradually creeping round it until it has reached and bound down the anti-mesenteric border of the bowel. This band typically occurs alone, the appendix is quite free, and probably normal to the naked eye, the proximal ileum ascending from the pelvis is dilated; no better depiction of this condition can be imagined than that of Dr. C. Mayo which Mr. Lane has reproduced in his opening paper.[3] I have now seen this type of band kink in such a large percentage of my cases of duodenal ulcer (I am sure I am not overstating it at 1 in 3) that I cannot believe this association is accidental. I have usually been content to free the ileum by dividing the band and to do a posterior gastro-jejunostomy as I did in the last case I operated on. Even if one upholds the view that the ileal kink *causes* the duodenal ulcer it does not appear to me illogical to relieve the end-result by the drainage brought about by a posterior gastro-jejunostomy, which is in itself in my experience one of the most satisfactory operations of surgery. In another recent case I operated on a moribund man for a perforated duodenal ulcer, and at the necropsy the kink was found and demonstrated by one of my medical colleagues and by our resident surgical officer.

As yet I have no fixed opinion as to the right treatment of this type of kink. When slightly developed division of the band gives at least temporary relief, but a raw surface has necessarily been produced, and at present we have no sure method by which we can prevent adhesions forming over this area; paraffin and an abdominal support often give much assistance. Then, again, extensive freeing of this band, especially in men, produces considerable disturbance for a few days, probably due to paralytic distension, so that when in doubt as to the safety of dividing a well-marked band it is wiser at once to short-circuit the ileum into the pelvic colon. My small experience coincides with Mr. Lane's, that ileo-colostomy is less dangerous than extensive separation of bands involving the ileum.

In my series of cases this isolated band controlling the lower ileum is commoner than the second type, in which a similar kink is produced by a twisted, narrowed, or kinked appendix adherent near its base to the mesentery, and eventually involving the circumference of the ileum (appendix forming inner limb of parallelogram of Lane). In this class are the cases of stasis which are much benefited by simple removal of the appendix. Dr. C. Mayo's figure, referred to above, well shows another way in which the appendix may be involved, as first described by Mr. Lane—viz., by being caught and dragged upwards and outwards by the lowest band passing from the parietal peritoneum on to the ascending colon and cæcum (bands representing the outer limb of the parallelogram of forces of Lane or Jackson's veil). In this type, too, removal of the appendix is beneficial in that appendicular colic or acute inflammation is prevented, but this fails to relieve the greater part of the mischief which is colonic stasis; I have seen several cases bearing out this contention for which ileo-colostomy alone appears, in my opinion, to be effectual.

The duodeno-jejunal band which, according to Lane's view, causes an abrupt kink at that flexure was, I believe, first described by Dr. W. J. Mayo[4] under the title "Relation of the Meso-colic Band to Gastro-jejunostomy"; it is interesting to note that so acute a mind did not suspect any causal relationship between this band and the gastric or duodenal ulcer for which presumably gastro-jejunostomy was required. I gather that Dr. Mayo regards this, together with the band suspending the duodenum to the gall-bladder and Lane's ileal band, as congenital in origin.

In the course of this discussion we have been told that dilatation of the duodenum or duodenal kink does not accompany duodenal ulcer; I should like to inquire on what evidence this statement is made, as apparently we are in this instance to accept evidence derived from a bismuth X ray, whereas in the same paper a bismuth X ray of the ileal kink was stated to be unreliable. Only last week a man was sent to me at Guy's Hospital as a case of duodenal ulcer. This was agreed to by one of my medical colleagues and myself as the probable diagnosis after a test meal, yet operation showed no ulcer, but a dilated duodenum and a marked cholecysto-duodenal band was associated with an extensive ileal kink caused by a kinked appendix controlling the ileum. I have seen this dilatation of the duodenum at several operations, just as I have under the same circumstances seen the ileum dilated behind one of the forms of ileal kink.

There is less discussion about the bands which form in relation to the colon. Wilms[5] described as a congenital variation the "cæcum mobile" which Jackson[6] believes to be secondary to obstruction from membranous pericolitis (Jackson's veil). I have seen these bands, as I have said first described by Lane, on many occasions passing down on the outer side of the ascending colon, and have usually found the cæcum dilated and prolapsed. I have less often met with a band at the splenic flexure, but in most of the cases in which the ascending colon has been involved the right half of the transverse colon has been drawn down parallel to it.

The close association of these conditions would seem to demand a common line of treatment. I do not feel drawn towards the cæcopexy of Wilms, nor did the operation of cæcoplication, which I saw carried out several times last year in the Mayo Clinic, appeal to me as sound, because it can only favour the further descent of the cæcum into the pelvis, and does not deal with the bands involving the colon. For this condition short-circuiting of the ileum into the pelvic colon appears to me ideal, and appears to have a brilliant future in cases where medical treatment has failed. If I rightly gathered the gist of the last few sentences of Dr. A. F. Hertz's lucid contribution to this discussion, this view will be a basis of treatment on which medical and surgical opinion will eventually agree. Colectomy will sometimes be required in severe cases or as a secondary operation to short-circuiting for persistent pain due to reflux into the descending colon.

Now the alternative theories to the evolutionary one of Lane are that these bands are congenital (developmental) or inflammatory in origin, and these alternatives are ably discussed in Jackson's paper to which I have already referred. Can the supporters of the congenital theory point to other instances in the structure of the body in which the abnormality regarded as congenital is hypernormal as such bands must be? Instances of hyponormal congenital abnormalities

[2] THE LANCET, vol. i., 1903, p. 153.
[3] Proceedings of the Royal Society of Medicine, vol. vi., No. 5, supp., p. 75, fig. 34.
[4] Annals of Surgery, 1908.
[5] Archiv für Klinische Chirurgie, 1913, vol. lxix., p. 795.
[6] Annals of Surgery, March, 1913.

(arrests of development) are common enough, but I cannot think of any instance of the converse; yet Dr. W. J. Mayo in a recent paper on the subject[7] writes: "Lane's kink is undoubtedly also of developmental origin." In a fair number of laparotomies in infants I have seen nothing to support this view.

Again, I cannot believe that bands (*a*) localised as they often are to the terminal ileum with the appendix free and normal to the naked eye, (*b*) always passing in the same direction as those which pass down and inwards to the ascending colon, and (*c*) limited to one aspect of the intestinal circumference, can have an inflammatory origin. I would even go so far as to regard as non-inflammatory some bands in which the appendix was involved, meaning that I have to find evidence that they were due to a subacute or chronic infection spreading from that organ. One has only to examine carefully several of these bands to realise that they are quite unlike in appearance ordinary inflammatory adhesions. My experience has absolutely convinced me that these bands and kinks produce pathological states, as evidenced by abdominal pain, tenderness, loss of weight, tone, and activity, flatulence, constipation, &c., and from my results in a small number of cases treated since 1908 by separation of bands with or without appendicectomy, ileo-colostomy or colectomy I have sufficient confidence to state as my firm belief that stasis is generally due primarily to a pathological condition of the lower ileum, evolutionary in origin, and that in well-marked cases surgical treatment is required, for I have seen marked immediate benefit result to these patients, as evidenced by loss of toxæmia and pain, gain in weight, improvement of appetite, and a return of ability to lead and enjoy an active life.

Devonshire-place, W.

REMARKS ON

ABNORMAL INTRA-ABDOMINAL DEVELOPMENTAL ADHESIONS.*

BY H. M. W. GRAY, M.B., C.M. ABERD., F.R.C.S. EDIN.,
SURGEON AND LECTURER ON CLINICAL SURGERY, ROYAL INFIRMARY, ABERDEEN; SURGEON TO THE ROYAL HOSPITAL FOR SICK CHILDREN, ABERDEEN;

AND

WILLIAM ANDERSON, M.B., CH.B. ABERD., F.R.C.S. EDIN.

IT is very extraordinary that in this country the subject of developmental adhesions affecting the intra-abdominal viscera has attracted so little attention amongst anatomical and surgical authorities. On the continent, and more especially in America, there has been a remarkable amount of literature produced concerning this subject. We have elsewhere described the more common forms of such adhesions and discussed their etiology, pathological effects, and treatment. In this communication we propose to make a short recapitulation of that paper and to discuss adhesions affecting other parts of the abdomen, as well as what may be called complications of the lesions already described.

It seems to us that Mr. Arbuthnot Lane's work has not by any means been given the consideration which it merits. The inclination has been to regard him too much as a "crank" on chronic constipation or chronic intestinal stasis, while he really deserves the highest praise for having so persistently preached his gospel. All the same, we do not agree with Mr. Lane regarding the etiological significance of these adhesions. Shortly stated, he regards them as the *result* of intestinal stasis, whereas we regard them as the *cause* of intestinal stasis. It must be clearly understood that our remarks are confined to a type of adhesion (congenital or developmental) which can be differentiated at operation, usually with ease, from those primarily induced by infective inflammatory processes (acquired). One must remember that these inflammatory or acquired adhesions may produce symptoms identical with those of developmental, and, further, that they may complicate the original developmental adhesions.

In the publication referred to we discussed at length the various theories as to the origin of these adhesions, and gave reasons why we came to look upon them as developmental. In a paper published since,† Professor J. M. Flint, of Yale University, has confirmed our theory in every respect. His paper, although published later than ours, was the result of independent observation. He illustrates the mode of formation of these membranes or adhesions in a very clear and convincing manner. Other writers (Frazier,[1] Coffey,[2] Blake [3]) have independently supported the embryological origin, but in a less definite way. It is manifest that the general tendency amongst the more recent writers is to discard the old explanations, and to incline to the acceptance of congenital or developmental etiology.

We have pointed out that the cause of these abnormal adhesions is what may be termed "excess of *physiological* fusion." Some critics have objected to this term, and it may be more correct to say that the conditions are due to an "excess of *developmental* fusion." While most of the abnormal conditions to be considered are due to this excess of developmental fusion, yet some are due to failure of ordinary developmental fusion or to the absorption of membranes which exist in the embryo. This will be pointed out in the course of discussion.

The more we study these developmental membranes and kinks the more are we impressed with the fact that they are in many cases responsible for much ill-health, either directly or by their remote effects, by interference with normal function of various intra-abdominal organs.

(a) *Obliterative adhesions of the lesser sac of the peritoneum.*—Normally the layers of the gastro-colic omentum are in great part adherent. Similar obliterative adhesions are very frequently found in various parts of the lesser peritoneal cavity and are most evident to the surgeon during the performance of posterior gastro-enterostomy or in cases of gastrectomy. There is no reason to suppose that such adhesions are due to inflammatory processes, because there is no evidence in their neighbourhood of any pathological lesion, nor is there in such cases any history pointing to a previous peritonitis affecting the lesser sac. They are patchy in distribution, and are usually easily separated without causing more than a slight ooze of blood. They apparently do not interfere with the motility of the stomach. They are evidently easily stretched and absorbed because they are very rarely found in cases of dilated stomach. On the other hand, they are fairly frequently found during the performance of posterior gastro-enterostomy where the stomach is not dilated—e.g., in cases of ulcer of the duodenum or lesser curvature. There is no reason to think that they have any causative influence in the formation of such ulcers. They are really only of interest in that, when well marked, they may cause some difficulty in the performance of these operations.

(b) *Adhesions affecting the gall-bladder, duodenum, &c.* (Fig. 1.)—As the gall-bladder buds out from the common duct, it carries with it a fold of the ventral mesogastrium on its under surface. This fold of peritoneum usually becomes absorbed. The membrane, when it persists, varies greatly in its extent and attachments. Above, it may extend so as implicate merely the apex of the gall-bladder, but in well-marked cases may reach as far as the fundus, or even to the under surface of the liver, if the gall-bladder does not reach to the anterior margin thereof. Below and behind, the membrane may blend with the peritoneum over the common bile-duct, or be continued on to the anterior surface of the pylorus or duodenum, even becoming continuous with the gastro-colic omentum, as Flint and others have pointed out, and of which condition we have seen several examples. In some of our cases a noticeable "white fusion line" marks the limit of these adhesions. This confirms their congenital origin (see our previous paper). The effect of traction on the gall-bladder may result in a sagging downwards near its junction with the cystic duct. When the patient is in the erect posture complete retention of bile in the gall-bladder may result from this kinking, and, owing to the tension and pressure of the bulging segment on the cystic duct, the gall-bladder may be unable to empty itself. Its spasmodic efforts to do so may cause excruciating pain. In one such case the gall-bladder was in almost a gangrenous condition when exposed at operation. It is quite

[7] American Journal of Medical Science, February, 1913.

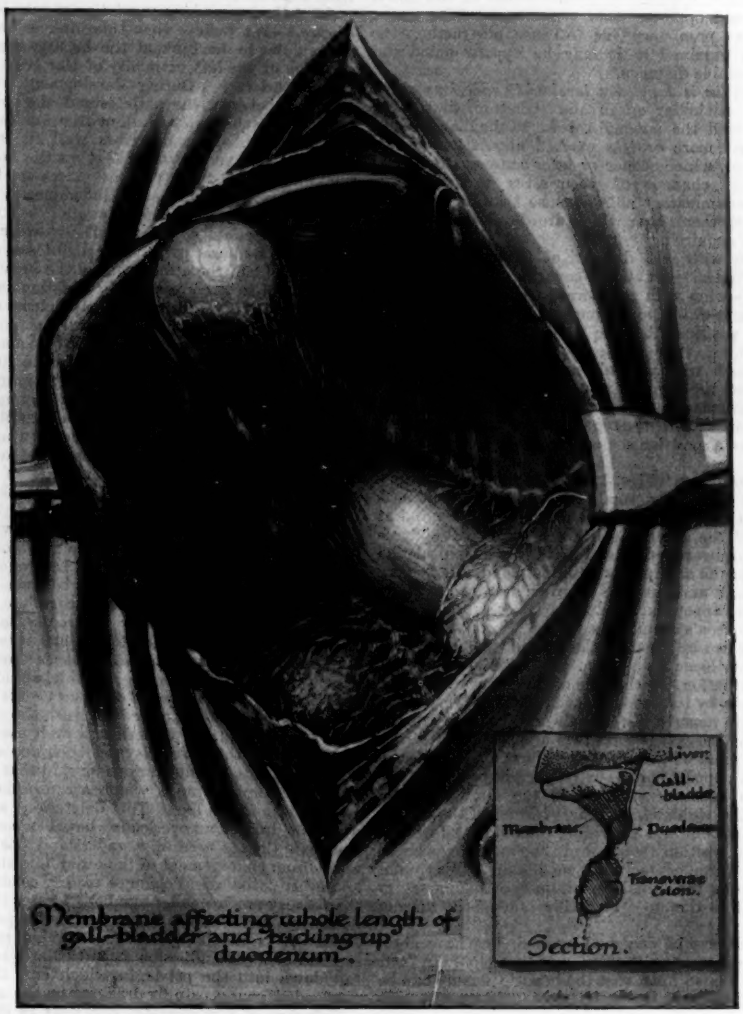
* This paper was received several months ago, but owing to its length publication has been delayed.—ED. L.

† Johns Hopkins Hospital Bulletin, October, 1912.

possible that kinking of the common duct may also be caused, but we have not yet seen such a case.

The membrane varies greatly in length. It may be so short that it tucks up the pylorus, or more commonly the duodenum, under the liver so much that a kink is formed. In some cases it appears as if the whole under surface of the gall-bladder were adherent to the duodenum and anterior aspect of the lesser omentum. Frequently the membrane is so loose that, even although well marked, no interference with the gastric or duodenal motility is caused. It may, by its connexion with the transverse colon, interfere with the aspect for a considerable distance. In one of our cases it arose from the meso-colon about an inch to the right of the junction, and was inserted on the right side of the jejunum just below that; it caused marked angulation at the junction. It may be "patchy" in arrangement, and seems to be then more likely to cause trouble. This membrane may interfere with the proper placing of the stoma in the performance of no-loop gastro-enterostomy. Such a membrane may cause kinking at or near the duodeno-jejunal junction, thus causing stasis in the duodenum and stomach. It is rather difficult to explain the formation of this membrane, but we

FIG. 1.



motility of that part of the bowel. Gall-stones may, of course, occur along with such adhesions. In fact, the stasis of bile caused by them is undoubtedly a predisposing factor in the formation of gall-stones.

(c) *Membranous fold at the duodeno-jejunal junction.*[4] (Fig. 2.)—This fold in its slightest form can be artificially produced by drawing up the meso-colon and drawing down the jejunum. It reaches from the under surface of the meso-colon to the duodeno-jejunal junction. In some cases, however, it is much more extensive, and may appear as a triangular membrane attached above to the meso-colon and extending along the jejunum on its anti-mesenteric

are inclined to the opinion that it is due to drawing out of a developmental peritoneal adhesion formed after the colon and meso-colon have passed to the right. It may become absorbed in parts, thus leading to a "patchy" arrangement.

(d) *Lower ileal membrane, sometimes producing the Lane kink*[5] (Figs. 3 and 5).—This is due, in our opinion, to excessive developmental fusion, in that the under aspect of the ileum and mesentery blends, in the same manner as the posterior surface of the ascending colon and meso-colon, with the posterior parietal peritoneum. During growth this adhesion becomes drawn out in the form of a roughly triangular or quadrilateral, filamentous membrane which is attached

below and externally to the iliac fossa and above and internally to the anti-mesenteric border of the last few inches of the ileum. Some writers have mentioned even as much as six inches of the ileum being implicated in this way. The membrane also may be "patchy" in arrangement, this being due either to parts only of the bowel or mesentery having become adherent or to parts of the original membrane having been absorbed. The membrane is loosely connected to the posterior leaf of the mesentery and under aspect of the ileum. This adhesion produces a more or less marked rotation downwards of the ileum on its long axis. It may cause a marked kink of the ileum at its inner attachment thereto, and also a slight kinking of the ileo-cæcal junction. Only in rare cases, apparently, is the lumen of the bowel actually narrowed opposite this membrane. Where the Lane kink is so pronounced as to cause obstruction, the small intestine proximal to it may be hypertrophied and dilated for a variable distance.

(e) *The appendix is sometimes involved in adhesions* which appear to have a similar origin and structure, and these adhesions may bind the appendix down to the iliac fossa in such a way that more or less marked angulation of the organ is produced, which sooner or later causes pathological changes. These changes of themselves produce peri-appendicular inflammatory adhesions so that it is difficult to distinguish between those which are developmental and those which are acquired.

In association with the descent of the colon and the fusion of the visceral peritoneum covering the back of the colon and meso-colon with the dorsal parietal peritoneum, the appendix may, owing to an unusual original retro-cæcal or retro-colic position, become and remain an extra-peritoneal organ.

The lowest part of Jackson's membrane may become spread out over the appendix and, by preventing free movement and evacuation of its contents, will predispose to attacks of inflammation of the organ. In this class of cases the appendix has a position somewhere towards the front of the cæcum.

(f) *Jackson's membrane*[4] (Figs. 4 and 8) is a thin filamentous veil containing numerous small linear vessels, which is attached to the parietal peritoneum under the liver and at the outer side of the ascending colon below it. It spreads inwards and downwards to blend with the colon in the neighbourhood of the anterior longitudinal band. It is very variable in extent and may be continued even over the "caput cæci" and appendix, binding the latter structure on to the cæcum. Jackson's membrane frequently contains small pieces of fat. It can be lifted off the front of the colon, with which it has very loose connexion. It may be somewhat irregular in distribution, so that the colon or cæcum may be tucked up in folds by its bands. It may produce very acute angulation at the hepatic flexure, where it is usually most marked. In some cases it is continued almost without interruption into the great omentum. We believe that Jackson's membrane is developed from the extreme right portion of the omentum which becomes attached to the dorsal parietal peritoneum of the right flank before descent of the cæcum occurs. As the cæcum and ascending colon descend to take up their normal position this part of the omentum becomes drawn out in the form of Jackson's membrane. We cannot accept the theories that this membrane is of inflammatory origin or that it is due to "crystallisation of the lines of strain," &c.

The membrane may be very well marked, but have absolutely no crippling effect on the action of the colon. In fact, in some cases it is so long that the hepatic flexure can be easily drawn out through the middle line incision. In such cases, of course, it requires no treatment.

(g) *Cæcum mobile.*—We believe that this condition is due to two factors: (1) an excess of developmental fusion, as evidenced frequently by the presence of a Jackson's membrane affecting the hepatic flexure and upper part of the ascending colon which, in these cases, causes more or less "kinking"; and (2) failure of developmental fusion in that the ascending colon, and possibly also its meso-colon, have not become normally adherent to the dorsal parietes. In several of our cases, on the other hand, in two of which volvulus of the cæcum had occurred, there was no Jackson's membrane, but adhesions at the splenic flexure caused kinking there. We believe that cæcum mobile causes symptoms only when obstruction, either at the hepatic or splenic flexure, occurs. In both cases the affected part of the bowel proximal to the obstruction is found to be hypertrophied and dilated. In this connexion it must be remembered that the cæcum during development sometimes, so to speak, overshoots the mark in that it passes beyond its normal situation into the pelvis. Smith[7] states that, in necropsies of 1000 children, he found in 10 per cent. that the cæcum had descended into the pelvis. According to some it may, during later development, acquire again its normal position. It can be easily understood that a lower ileal membrane may be present though the cæcum has dropped into the pelvis. It is likely that, in such circumstances, an ileal membrane will cause troublesome symptoms from angulation.

(h) *Adhesions causing angulation at splenic flexure.—Payr's disease.*[8]—We believe that this kink is brought about in a way similar to the kink at the hepatic flexure—namely, by adhesion of the left extremity of the great omentum to the dorsal parietes. During development the part of the omentum between the parietes and the splenic flexure does not stretch sufficiently to allow free movement of that part of the colon. Payr describes well the condition and its complications, such as the effect on the bowel proximal to the kink, but we think that he places too much importance on the causative influence of inflammatory processes in the neighbourhood of the splenic flexure.

(i) *Meso-sigmoid adhesions.*—These occur very frequently indeed in the lower part of the iliac fossa external to, and slightly behind, the attachment of the broad ligament in the female, and in a corresponding situation in the male. We believe that this condition is due to excess of developmental fusion. It is, one might say, an attempt on the part of the meso-sigmoid to become adherent, in the same way as does the ascending and descending meso-colon to the dorsal parietal peritoneum. The sigmoid is often slightly narrowed opposite the part of the meso-sigmoid which is implicated. It will be seen that angulation of the bowel readily occurs here, as Lane has pointed out. We may mention again that we do not think that Lane's theory is correct—that the adhesion is due to the crystallisation of the lines of strain, i.e., an attempt is made by nature to overcome the drag produced by an overloaded bowel. We believe that the adhesion produces a kink which causes the stasis and overloading of the bowel. The white fusion line of Toldt which, when present, denotes developmental adhesion, is frequently very well marked here. Above it the fusion between the visceral and parietal peritoneum is sometimes incomplete, so that pouches, opening either internally or externally, are found. The partial nature of these adhesions seems to us to further controvert Lane's idea. The adhesion is least dense where, during its formation, the line of strain would be greatest.

Effects of the meso-sigmoid adhesion on the left ovary.—The ovarian vessels run downwards beneath the inner part of this adhesion. When the adhesion is well marked the process may implicate these vessels and their accompanying nerves and lymphatics in a deleterious way, in that they are caught up by the fibrous strands which are especially well marked at the white fusion line. This deleterious action is fortified when the drag of an overloaded bowel comes also into play. One can therefore readily understand that suffering will result from engorgement of the ovary, and that inflammatory and other pathological changes readily occur in it.

In a very much smaller number of cases the meso-sigmoid adhesion occurs at the upper and outer part of the iliac fossa. It is not likely to cause trouble there unless the sigmoid below the adhesion is particularly long and tends to fall down into the pelvis, in which case the bowel, when overloaded, causes pain by dragging on the adhesion.

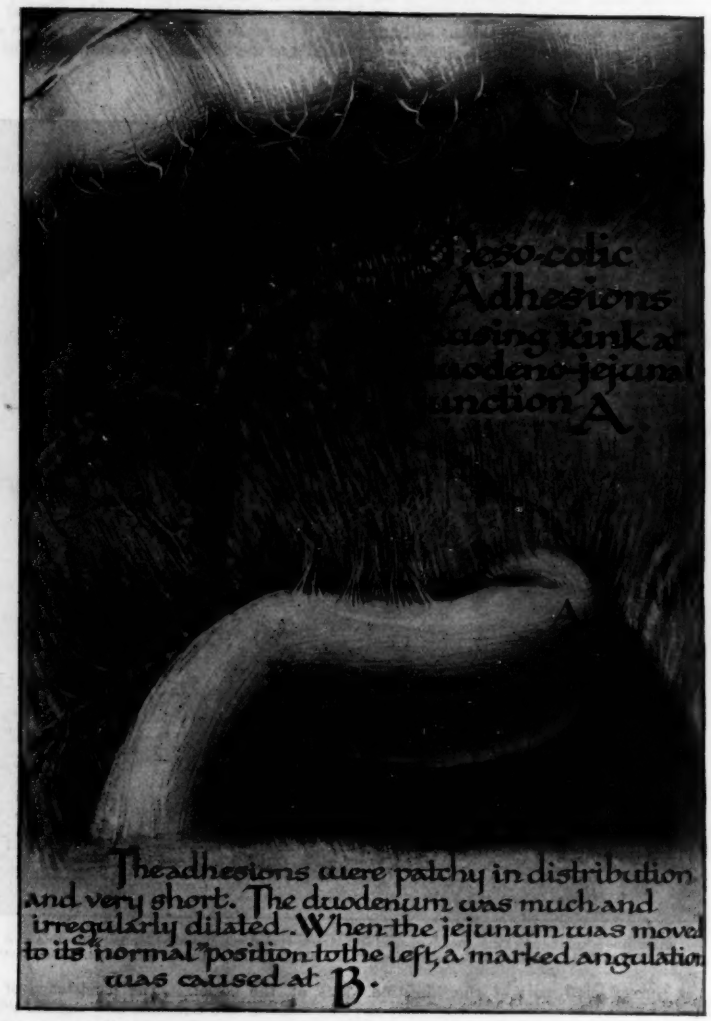
Influence of developmental adhesions in the production of visceroptosis.—We believe that the presence of such congenital adhesions have much to do with the production of visceroptosis. In cases where several forms of adhesions are present—and this occurs fairly frequently—the development of visceroptosis can be followed easily. For example, splenic kink produces ptosis of the transverse colon; hepatic kink or well-marked Jackson's membrane tends to produce ptosis of the cæcum or cæcum mobile; adhesions about the pylorus or duodeno-jejunal junction will cause gastroptosis; the terminal ileal kink may produce enteroptosis. Patients suffering from visceroptosis have a peculiar "narrow" build or physique, called by Cohnheim[9] the "habitus enteropticus." Even in children one can appreciate such a build, and

whether a mere coincidence or not, well-marked adhesions of the different parts of the bowel have often been found in such children. There may be some obscure relationship between the "narrow build" and the tendency to the formation of these congenital adhesions.

Symptomatology.

The typical sufferer from membranes and kinks is the slightly built, often tall female, who seems predisposed to hindrances to the normal motility and digestion of the bowel or other organ have been removed. Symptoms in such conditions are either *chronic*, due to stasis brought about by the hampered action of the organ, or more *acute* and *intermittent* when the kink becomes so sharp as to cause complete obstruction. We would here emphasise this intermittency—the patient may not notice any symptoms pointing to a pathological condition during intervals of weeks or even months. There is often some exciting cause, such

FIG. 2.


Adhesions
A
The adhesions were patchy in distribution and very short. The duodenum was much and irregularly dilated. When the jejunum was moved to its "normal" position to the left, a marked angulation was caused at B.

choose occupations which do not demand great activity. For example, barmaids, seamstresses, or shop assistants contribute largely to the number of such patients.

In probably all cases, when the history and general symptoms of the patient are carefully gone into, there is more or less evidence of a persistent influence of the various forms of adhesions under consideration. It is, however, possible to differentiate, as is so frequently the case in intra-abdominal lesions, between a truly chronic type and a more or less acute type. Such patients have sometimes become so accustomed to, or possibly have never known anything else than, a subnormal condition of health and the presence of discomfort or slight pains within the abdomen, that they appreciate normal health only after the mechanical as sudden exertion, which stimulates the onset of an acute attack.

It may be well to describe first the symptoms produced by adhesions affecting the intestinal canal as these are by far the most frequent.

Symptoms affecting the intestinal canal.—The chronic symptoms are general and local. The *general* ones are those of auto-intoxication and have been so admirably described by Lane, Jackson, Payr, and others, that for a detailed account we cannot do better than refer readers to their articles. Quoted shortly they are: staining and wrinkling of the skin, excessive sweating (especially in the axilla and groins), enfeebled circulation with cold extremities, slightly swinging temperature, loss of flesh, muscular degeneration,

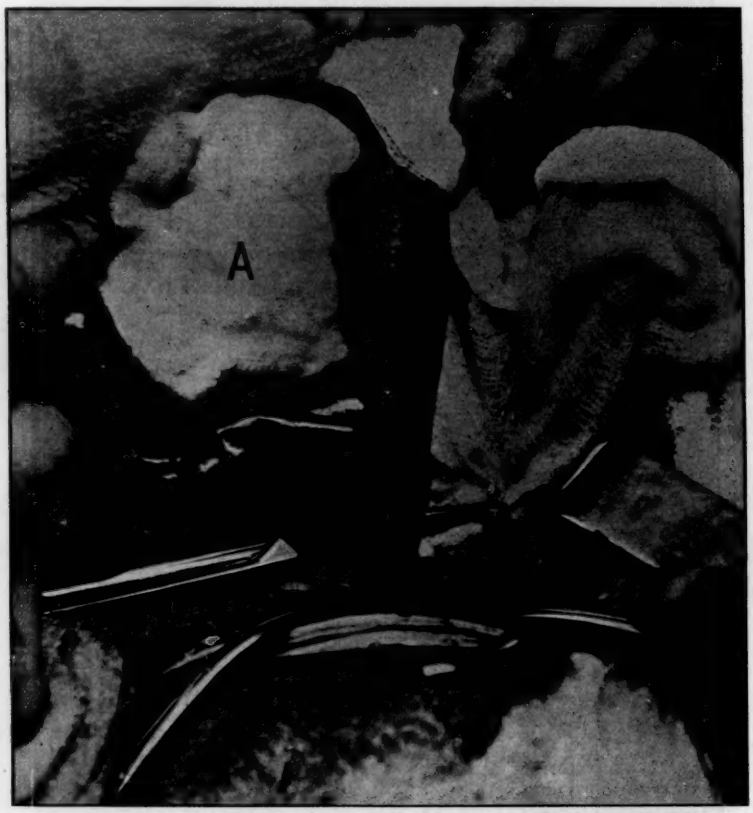
enteroptosis, dulling of mental faculties and restlessness during the night, headache, painful joints, and cystic degeneration of the mammæ which is liable to be followed by cancer. Most, but not by any means all, of our patients were of a "narrow," spare build corresponding to Cohnheim's "habitus enteropticus." This was well seen in some of the children under treatment, as we have already pointed out.

The *local* symptoms are: a distended heavy feeling in the abdomen, especially on the affected side, occasional slight twinges of pain and borborygmi at a variable time after the taking of food. Lying on one or the other side may increase the intensity of, or, on the other hand, cause relief of, the symptoms, the latter being sometimes accompanied by gurgling. Patients are usually most comfortable when lying flat on their backs. They are occasionally conscious of a sense of blocking at the affected part of the intestine. The distension of the bowel may be noticeable externally as a slight ladder pattern of the small intestine or bulging occupying the site of the colon proximal to the kink. Massage sometimes relieves these symptoms. Patients usually give a history of having to take increasingly large doses of varying aperients to relieve constipation. The fæces are usually foul smelling and may contain excess of mucus. Some of our patients have had troublesome diarrhœa, and one or two have noticed occasionally a small amount of blood in the stools. At any time these chronic symptoms may become acute.

X rays may show a definite heaping up of the bismuth meal proximal to the site of obstruction. We recommend strongly that the bismuth meal should be given early in the morning, and that the patient should be told not to lie down until the examination by screen or skiagram is carried out in the evening. The X ray examination should be made with the patient in the erect posture. Bismuth, suspended in mucilage, injected per rectum, may not give such reliable information as when given by the mouth, because the kink may allow it to pass in an upward direction more readily than the bowel contents are allowed to pass downwards.

Opposite the site of adhesion, at the meso-sigmoid, for example, there is sometimes noted considerable spasm of the bowel. This can be made out by palpation of the iliac fossa when the fingers are drawn from the umbilicus towards the anterior superior iliac spine, an elongated sausage-like mass being felt. This is occasionally diagnosed as tumour but can be differentiated from a growth or fæcal mass by the fact that it is not so apparent when the fingers are drawn over it parallel to the fibres of the external oblique—i.e., to the long axis of the bowel. The persistence of this spasm after treatment of the adhesion may explain some of those cases in which occasional pains in this region are complained of.

FIG. 3.



Terminal ileal membrane causing kink (Lane's kink) in a man aged 60. Acute symptoms appeared for first time one year before operation. A, Gauze swab placed in angle of kink to demonstrate the latter. Scissors passed beneath the membrane.

The *acute* symptoms vary markedly in intensity. Patients complain of a more marked "indigestion." The sense of fulness after meals varies with the kind of food ingested. Pain, usually dragging in character and accompanied very frequently by colicky exacerbations, may occur in from one to four hours after food. The site of the pain varies according to the part of the bowel affected, but may be referred in a somewhat misleading manner. Tenderness is usually to be made out over the affected part and is therefore of importance. Symptoms indicating complete intestinal obstruction may occur and even persist until relieved by operation. Posture usually affects these pains in a marked way. For example, bending may bring them on and the supine posture relieve them. Lying on one or the other side

may be uncomfortable or even painful, and stimulate the colicky attacks. In one or two of our cases of Lane's ileal kink emptying of the bladder relieved the colic. Absence or only very slight rise of temperature will help to differentiate such an attack from acute appendicitis.

Since we have become alive to the presence and importance of such adhesions, the diagnosis of the cases has been easier, so that now, after consideration of the symptoms, the true character of the case can be more than suspected. The difficulty of diagnosis may be gauged from the fact that so many different conditions have been diagnosed previous to operation. In operated cases, where, owing to lack of the appreciation of the importance of these different adhesions, although they were recognised, they were left untreated, one may say that almost invariably the patients were either unrelieved or only partially or temporarily relieved, whereas in our later cases, in which they were treated, the results following operation have been more satisfactory and permanent. The conditions diagnosed previous to operation were usually appendicular colic, duodenal or gastric ulcer, chronic intussusception, movable kidney, renal colic, tubo-ovarian disease, cancer of the colon, or mucous colitis. As a matter of fact, in some cases the pathological entities diagnosed were found, as well as the intestinal adhesions, and we have no doubt that in all probability these adhesions have a great causative influence in the development of such lesions from both the mechanical and bacterial irritation brought about by their presence. For example, cancer of the colon is frequently found just proximal to the site of the colonic kinks. In some cases the diagnosis cannot be arrived at without opening the abdomen. In old people especially, great care should be observed during the intra-abdominal examination. When adhesions are numerous and associated with the presence of hardened fæces in the colon it is possible to overlook the presence of a malignant growth.

The following three cases illustrate the two types, chronic and acute:—

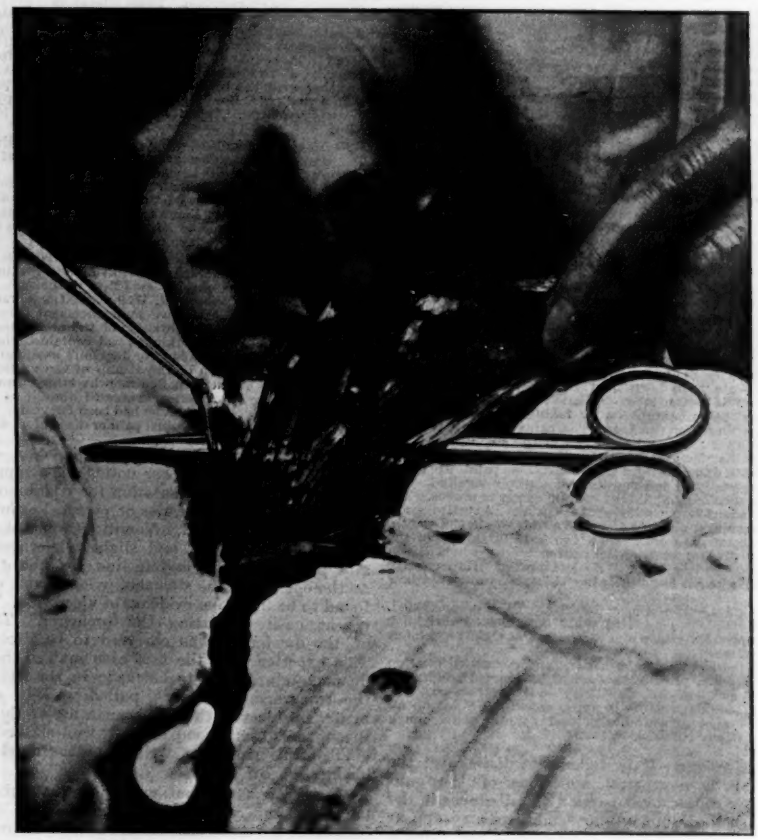
CASE 1.—The patient, a woman aged 32 years, had been married for seven years and had one miscarriage five years ago. Since girlhood she had been troubled with a "weak stomach"—i.e., occasional sickness and vague discomfort in the abdomen. She had been constipated since the age of 16 years, but since appendectomy was performed in London five years ago this had been very much worse.

Present trouble.—During the last year she has been troubled with severe pain in the left iliac region, especially before the bowels move. She has been examined by several gynæcologists, who told her the left ovary was tender but not enlarged. She has also been troubled with pain in the right lower abdomen at irregular intervals. This pain, which is accompanied by a feeling of fulness and distension, comes on one to four hours after food, and is worse when she is constipated. After taking large doses of aperients she feels better. She is also troubled with acid and gaseous eructations and a painful burning feeling in the epigastrium at irregular intervals after food. Vomiting relieves this disagreeable feeling. Vomitus consists of food taken—no blood has been noted. Stools natural in colour—no blood or mucus. Some years ago she was treated, by dieting and rest, for duodenal ulcer. Menstruation is regular in time and quantity. For two days before, and during the period, she suffers acute pain in the left ovarian region which necessitates her lying in bed for three or four days.

Urinary system.—No pain during, nor frequency of, micturition. She says that she often has a feeling of fulness and dragging in the right loin which lasts for ½ to 2 hours, and is relieved by a feeling as if "something hot" ran down towards the pelvis in the right iliac region. She has not noticed any increase in the amount of urine passed after this sensation.

Physical examination.—The patient is of a sallow, earthy complexion, and of the "habitus enteropticus" type. The right kidney is freely movable and tender, not appreciably enlarged. Marked distension and gurgling over cæcum which is tender. Definite tenderness over the left

FIG. 4.



Jackson's membrane in a child aged seven. Scissors passed beneath the structure.

ovarian region, and the sigmoid above and outside this is distinctly palpable as an elongated somewhat tender mass.

Operation.—Nephropexy through oblique incision posteriorly. Abdomen then opened through a right paracentral incision. A few congenital adhesions were found binding down the cæcum to the posterior abdominal wall. There was a well-marked hepatic kink caused by the binding together of the ascending and transverse colons for about 3 inches. Hepatic flexure tucked up below liver by Jackson's membrane. These adhesions were divided, and the raw surface covered by plastic suture. There was a fairly extensive meso-sigmoid membrane markedly involving the ovarian vessels and kinking the sigmoid. This was divided, the ovarian vessels ligatured and divided, and the raw area covered by plastic suture. The rest of the meso-sigmoid was very long and the bowel above the kink was markedly dilated and hypertrophied. The stomach was somewhat dilated and dropped, but the pylorus was quite patent, and there was no evidence of ulceration in either stomach or duodenum.

Four months after operation the patient was examined: "She says that her appetite is very good indeed and that she is never troubled with heartburn or pain after food. The condition of the bowels is very much improved as she requires to take only 10 m. of liquid extract of cascara sagrada about once a week. There is no pain when the bowels move. Four days after her operation she had, much to her surprise, the first spontaneous movement of the bowels since five years. She has had two menstrual periods since operation. These have been practically painless. She is now believed to be about two months pregnant. Although she feels and looks so much better she does not think she has put on weight. Unfortunately, the weight was not taken before operation, so that this cannot be verified."

CASE 2.—A short, rather thick-set man, aged 55 years. For some weeks past had been suffering from "indigestion," with loss of appetite and weight. A week before admission bowels became obstinately constipated, there was pain in the left iliac region, and occasional sickness and vomiting.

Physical examination.—Marked distension of the sigmoid causing visible tumour in the left iliac fossa. Tenderness and muscular rigidity.

Operation.—Well-marked meso-sigmoid adhesions with hypertrophy of descending colon. Plastic with omental flap.

Three and a half years after operation patient is in excellent health and quite free from any abdominal pain.

CASE 3.—A man aged 49 years. Except for some abdominal trouble (acute appendicitis?) 20 years ago, patient has always been quite healthy, and until his present illness commenced he had not been one day off duty for eight years. He says, however, that his bowels have always been rather constipated, but this was overcome by the taking of figs, prunes, &c. Temperate habits.

The present trouble began eight months before admission to hospital when he became a little "run down" and felt rather easily tired. Two months later the bowels became more obstinate and he began to complain of "gripping" pains brought on by taking food or on leaning forward to lift anything from the floor. The pains generally came on one to three hours after food, and were felt in the umbilical region, radiating to the left iliac fossa and occasionally to the right iliac fossa. Lying flat on his back or on his right side relieved the pain. He sometimes felt sick, especially in the morning, but never vomited. The stools were of natural colour and did not contain excess of mucus. The passing of urine occasionally relieved the pains. Appetite poor, especially in the mornings, when he often had a bad taste in the mouth. The condition got gradually worse. He felt so tired by the end of the week that he had to give up work. After resting for the whole day on Sunday he felt considerably better. No joint pains. No excessive sweating. He thinks he has lost a little in weight, but cannot say how much.

Physical examination.—Appearance healthy. Well proportioned. Examination of the abdomen revealed slight tenderness and rigidity occasionally over appendix region and upper part of right rectus, but was otherwise negative.

Operation.—Well-marked terminal ileal band and downward rotation of the bowel causing kink. Ileum above somewhat dilated and hypertrophied. Plastic and omental flap. Appendix retrocæcal. No dropping of cæcum. No abnormality in upper abdomen. Since operation (nine months ago) general health and appetite have much improved. Pains entirely relieved.

Gall-bladder adhesions.—It is difficult to distinguish the symptoms caused by congenital adhesions of the gall-bladder from those caused by impaction of gall-stones in the cystic duct. In both instances the symptoms may appear suddenly, such as spasmodic pains, tenderness and rigidity over the gall-bladder, with possibly dorsal hyperæsthesia, malaise, sickness, and other symptoms credited to the presence of gall-stones. More or less intense congestion of the gall-bladder occurs in both conditions. In fact, in all our acute cases of adhesions one felt that in a very short time gangrene would have resulted, so purple and distended was the gall-bladder when exposed. In one case which was operated on under local anæsthesia, immediate relief of the severe symptoms was obtained when the gall-bladder was opened. The following cases are typical of this disorder.

CASE 4.—One year before admission the patient, a woman aged 52 years, suffered from an attack of abdominal pain, similar in character to the present, which lasted about ten days and then gradually subsided. Since then she has never been quite well, suffering from "indigestion" and indefinite abdominal pain. Never any jaundice.

Present trouble.—Commenced 18 hours before admission with acute pain over the gall-bladder region accompanied by sickness and vomiting. The pain was continuous, but also showed irregular exacerbations which caused her to "roll about in bed." Stools of natural colour but rather loose.

Physical examination.—Temperature, 101° F.; pulse, 100; respirations, 20. Patient looks ill. Is of rather spare build. Abdomen distended. Marked tenderness and rigidity all over right side, but most marked over gall-bladder region. No tumour to be made out on account of rigidity. Marked hyperæsthesia over the right lower ribs posteriorly.

Operation.—Abdomen opened by oblique muscle-splitting incision over gall-bladder. Small quantity of turbid fluid in peritoneal cavity. Gall-bladder distended, very tense, and of a purple colour. Adhesion affecting the apex of the organ, causing kinking at the commencement of the cystic duct. On opening the viscus thick, foul-smelling, purulent material escaped. No stones present in gall-bladder or biliary ducts. Cholecystostomy performed. Drainage for 15 days. Culture of pus gave pure bacillus coli growth.

A year afterwards the patient was readmitted on account of tenderness over the gall-bladder region. Wound opened up and a small quantity of pus evacuated. Gall-bladder drained. Drainage for 14 days. The patient has remained well for eight months after second operation.

CASE 5.—The patient was a man aged 53 years. The present trouble began six or eight years before admission with occasional attacks of pain in the epigastrium. These attacks have gradually become more frequent, until now he says he is never free from pain. The pain is of a continuous grinding character, is located in the right hypochondriac and epigastric regions, but there are acute exacerbations coming on from a few minutes to two hours after the taking of food. Vomiting has occurred at irregular intervals during the last six months, and this together with the belching of wind relieves the pain. He has never been jaundiced. Bowels constipated. Pain relieved after taking large doses of aperients. Appetite good, but he is afraid to eat on account of pain.

Physical examination.—The patient was of slim, narrow build. Tenderness and rigidity over the upper part of the right rectus abdominis. No definite tumour felt in this region. Distinct splashing of stomach contents elicited. On distension of the stomach by CO_2 gas, the lower border was found to reach to a point about a finger's breadth below the umbilicus. Decided hyperæsthesia over an area about 2 inches in diameter situated over the angles of the ninth to the eleventh ribs on the right side.

Operation.—Middle line incision above umbilicus. Stomach dilated, due to kink of pylorus caused by membrane tucking it up to under surface of gall-bladder. No evidence of ulcer. Posterior no-loop gastro-enterostomy performed. Well-marked membrane causing sacculation of gall-bladder just above commencement of cystic duct. As the sacculation persisted after division of the membrane cholecystectomy was performed. Appendix kinked and contained three concretions, so was removed. No Lane's kink or Jackson's membrane present. Small drain inserted in region of the stump of the cystic duct, and rest of wound closed. When seen five months after operation the patient, who was leaving for America, expressed himself as being in excellent health, and much better than he had been for years. He was taking his food well, and had no abdominal pain or discomfort whatever.

Adhesions at the duodeno-jejunal junction.—In three cases which have come under our notice the symptoms were those of gastric stasis and dilatation for which no clearly defined cause either in the histories or physical examinations of the patients was obtained. Vomiting was not so pronounced as in pyloric stenosis, and slight tenderness was occasionally present in the middle line just above the umbilicus. At the operations the stomach, pylorus, and duodenum were found to be free from evidence of ulceration. The pylorus was patent, easily admitting the forefinger. The visible part of the duodenum was observed to be abnormally dilated. This experience in the first case enabled the diagnosis of a duodeno-jejunal kink to be made in the latter cases, before the transverse colon was pulled up. In another case a malignant ulcer of the lesser curvature of the cardiac end of the stomach was accompanied by well-marked adhesions and kink of this region as well as of the duodenum and gall-bladder.

As already pointed out, we believe that this condition may be one of the causes of gastroptosis. As W. J. Mayo has indicated, the membrane should always be divided during the performance of a no-loop posterior gastro-enterostomy, otherwise it may lead one to place the stoma in the intestine too low down, or be the cause, by preventing proper peristalsis, of vicious circle. It is quite possible that this membrane, as well as the one affecting gall-bladder and duodenum, may be a cause of acute dilatation of the stomach.

Effects of meso-colic adhesions on the left ovary and Fallopian tube.—As indicated, these are chiefly due to congestion, owing to obstruction of the venous and lymphatic return, and to pressure or dragging on the ovarian nerves. The symptoms are usually pain, which is often aggravated when the patient has to stand long, or is unusually constipated. It is worse before and during the menstrual period, and there is also tenderness on palpation both externally and bimanually. The ovary is felt, not uncommonly, to be considerably enlarged. The symptoms are usually relieved, after a time, when the patient lies down.

(To be continued.)

ON THE PROGNOSTIC SIGNIFICANCE OF SECONDARY POLYCYTHÆMIA IN CARDIO-PULMONARY CASES.[1]

BY F. PARKES WEBER, M.D. CANTAB., F.R.C.P. LOND.,
SENIOR PHYSICIAN TO THE GERMAN HOSPITAL, LONDON.

THE frequent occurrence of polycythæmia in those cases of congenital heart disease (especially congenital pulmonary stenosis) which are associated with more or less cyanosis is well known. A few such patients live to adult life, like a young man, aged 22 years, whom I showed before the Clinical Section of the Royal Society of Medicine in November, 1908,[2] and another young man, aged 22 years, whom I showed, with Dr. G. Dorner, before the same section in January, 1911.[3] In both communications the nature of the secondary blood changes was specially considered. In my first communication[4] evidence was furnished in support of the modern doctrine that the excess in the number of red blood corpuscles in such cases was largely of a compensatory (conservative) nature; that it was a manifestation of the attempt on the part of the bone marrow to make up for imperfect oxygenation of the blood and tissues of the body by a numerical increase of the red cells—that is to say, of the oxygen carriers of the blood; that it represented, in fact, a vital compensatory reaction analogous to the increase of the polymorphonuclear leucocytes in the blood consequent on streptococcal invasions, &c. It was furthermore pointed out that the figures obtained by actual blood counts might make one underestimate rather than overestimate the total numerical excess of erythrocytes in the body, for there was considerable evidence indicating that when in chronic cardiac cases the erythrocyte count per cubic millimetre of blood was above the normal (relative polycythæmia) the total volume of blood in the whole body was likewise excessive, a supposition confirmed by the congested appearance of the ears, lips, nose, tongue, and retinæ in many cases.

In the second case, that described in the second communication,[5] additional evidence pointing to the same conclusions was obtained by means of the estimation of the total hæmoglobin and total blood volume in the body by Haldane and Lorrain Smith's carbon monoxide method. As concentration of the blood resulting from delayed circulation (stasis) in the capillaries might partly account for the polycythæmia in chronic cardiac cases, we attempted to measure (as I proposed in the first paper) the degree of any such blood concentration (if present) by estimating the total solid residue in the patient's blood serum, just as Weintraud and Senator estimated it in cases of so-called "splenomegalic polycythæmia" or "erythræmia."[6] The results of the various investigations carried out showed that the case was an extreme example of cyanosis and polycythæmia in an adult, secondary to congenital heart disease. They showed that the polycythæmia could not be accounted for by concentration of the blood as a whole, though the blood plasma may have been very slightly concentrated, probably as a result of capillary blood stasis. They proved that, as in splenomegalic polycythæmia (erythræmia), not only the number of red corpuscles and the amount of hæmoglobin per cubic millimetre of blood were greatly above the normal, but also the amount of hæmoglobin (as measured by the oxygen capacity) and the volume of blood per 100 grammes of bodyweight; there was, in fact, a condition of true plethora (polyæmia) present, so that the degree of absolute polycythæmia was much greater even than the degree of relative polycythæmia. The polycythæmia was doubtless, as in cases of splenomegalic polycythæmia (erythræmia), mainly due to an actual increased formation of red blood cells in the bone marrow.

The secondary polycythæmia in cases of congenital heart disease is seldom, if ever, rivalled in degree by the secondary polycythæmia which sometimes, as is well known, occurs in chronic acquired valvular affections (of the mitral valve) and in adherent pericardium. It is more nearly rivalled by the marked secondary polycythæmia, which it is my intention to consider in the present paper, occasionally associated with late stages of pulmonary emphysema, chronic bronchitis, asthma, old bilateral pleuritic adhesion, chronic interstitial pneumonia, and pulmonary fibrosis; that is to say, it may be rivalled by the secondary polycythæmia in what I term "cardio-pulmonary cases." The polycythæmia in all these groups of cases differs, however, from the polycythæmia (possibly of primary myelogenous origin) associated with chronic splenomegaly, which has been termed "erythræmia,"[7] by the not infrequent absence of real cyanosis in erythræmia, especially in its early stages.

Is polycythæmia a good or a bad sign in cardiac cases? In my first paper[8] I answered this question as follows: "Just as hypertrophy of the walls of the heart is useful in so far as it compensates for mechanical defects in the valvular apparatus, so also is polycythæmia useful in so far as it compensates for difficulties in the proper oxygenation of the blood and tissues of the body; but just as in cardiac valvular disease great hypertrophy of the heart indicates some grave defect in the valvular mechanism, so also an extreme increase in the number of erythrocytes in the blood points to there being great impairment of the normal process of oxygenation of the body."

With the "cardio-pulmonary cases," however, with which I am chiefly concerned in the present paper, the prognostic significance of the polycythæmia is, I believe, somewhat different, or rather, as I would prefer to put it, the outlook is exceedingly grave at the stage of the disease when cyanosis and a great degree of polycythæmia become striking clinical features. A typical history of the kind of cases to which I refer is somewhat as follows.

The patient, more frequently a male, and at about middle age, has been accustomed to attacks of asthma and bronchitis and has signs of emphysema of the lungs. He has been subject to "colds" and bronchitis in winter, which have frequently lasted a long time. Sometimes there is also a history of past attacks of pleurisy or pneumonia. On the whole, however, he has managed to keep on fairly well with his business and other occupations. But at last, probably during one of his winter attacks, his cyanosis attracts attention and becomes a marked feature of the case. His cheeks, nose, ears, lips, tongue, soft palate, and fauces are all livid, and so are his hands, though the degree of blueness varies from time to time, from day to day, or from hour to hour, according to temporary conditions of his circulation associated with the state of the weather, the temperature of the room, the amount of bronchitis, &c. The conjunctivæ may be reddish and suffused, as in cases of splenomegalic polycythæmia (erythræmia). The short acute paroxysms of asthma, to which he probably used to be subject, become less frequent or no longer occur. But there is often more or less chronic dyspnœa and wheezy breathing. When his blood is examined there is found to be decided polycythæmia, so that the number of red cells may reach 7,000,000 or more to the cubic millimetre of blood. There is no longer the same tendency to recover, or the recovery is likely to be only temporary, and an attempt to resume anything like his ordinary mode of life and daily occupations leads to a relapse. The right side of the heart is hypertrophied and more or less dilated, as may be shown by Roentgen ray examination. The brachial systolic blood pressure is rather low, or at least not excessive, unless there are special complications—namely, decided arteriosclerosis or chronic interstitial nephritis (as in Case No. 11)—present. The fingers are often "clubbed." Usually the liver becomes enlarged, and often slight ascites develops. Occasionally the ascites may be much greater, needing tapping, and there may be more or less general œdema. With increasing

[1] A paper communicated to the Medical Section of the Royal Society of Medicine on Feb. 25th, 1913.
[2] F. P. Weber: Proceedings of the Royal Society of Medicine, Clinical Section, 1909, vol. ii., p. 23; see also Edinburgh Medical Journal, 1909, New Series, vol. ii., p. 18.
[3] Weber and Dorner: Proceedings of the Royal Society of Medicine, Clinical Section, 1911, vol. iv., p. 85; see also THE LANCET, 1911, vol. i., p. 150.
[4] F. P. Weber: Edinburgh Medical Journal, 1909, loc. cit.
[5] Weber and Dorner, loc. cit.
[6] Vide F. P. Weber: Polycythæmia, Erythrocytosis, and Erythræmia, Quarterly Journal of Medicine, Oxford, 1908, vol. ii., pp. 85–134. By analogy with the terms "leucocytosis" and "leukæmia" the term "erythrocytosis" is sometimes employed to signify a secondary ("reactive") increase of the red blood corpuscles so as to distinguish it from a condition ("erythræmia") in which the increase of the red cells is apparently due to a primary disorder of the erythrocyte-producing tissue of the body.
[7] Vide F. P. Weber, Quarterly Journal of Medicine, loc. cit.
[8] F. P. Weber: Edinburgh Medical Journal, 1909, loc. cit.

cardiac failure orthopnœa becomes more marked. With increasing cyanosis and chronic carbonic acid poisoning there is often remarkable somnolence, and the sleepiness may progress to actual coma (the so-called "cyanotic coma"). Towards the end there may be epileptiform twitchings or convulsions. Death may be due to actual carbonic acid poisoning or to intercurrent broncho-pneumonia, or other intercurrent affections, or may be due to gradual cardiac failure. In regard to the etiology, former abuse of beer or alcoholic drinks sometimes plays a part in addition to asthma, pulmonary emphysema, chronic bronchitis, old bilateral pleuritic adhesions, chronic interstitial pneumonia, and pulmonary fibrosis (which may be partly of chronic tuberculous origin). Arrillaga[9] attributes the onset of the cyanotic stage to the occurrence of secondary sclerosis in the pulmonary artery, but I think that this explanation can only occasionally be the correct one, possibly only in exceptional cases. I should like to mention here that, as far as I can judge, the best marked polycythæmic reactions occur in individuals (especially chronic asthmatics) of Jewish race[10] and at about middle age, when the reactive powers are stronger than in old age.

In regard to treatment some of the cases improve (at least temporarily) under prolonged rest in bed, small doses of potassium iodide, cardiac stimulants, diuretics and expectorants, oxygen inhalation, and perhaps also blood-letting. Following are illustrative cases, in some of which post-mortem examinations were made. The condition of the bone marrow was examined in one case (No. 1), and a decided erythroblastic reaction was found present. This is analogous to the erythroblastic reaction found in the bone marrow from cases of polycythæmia secondary to congenital heart disease by E. Weil, of Paris,[11] and by L. G. J. Mackey, in England.[12] It is perhaps worthy of special mention that in the following cases nucleated red cells were not seen in the circulating blood, except in one case (No. 3), and then only a single one, on one occasion only. The slight leucocytosis observed in some of the cases was probably secondary to bronchitis. Owing to the excess of carbonic acid in the blood of cyanotic "cardio-pulmonary" cases the blood-viscosity is probably increased out of proportion to the increase of red cells in the cubic millimetre of blood.

Cases.

CASE 1 (1906).—Woman, aged 29 years, of medium size. There was some evidence pointing to previous indulgence in alcohol. A year previously (in the winter 1904–1905) she had had a long illness characterised by shortness of breath and cough, with blueness of the face and finger nails. Her condition had improved much, however, and the cyanosis had left her. But a few weeks before her admission (Dec. 29th, 1905) to the German Hospital the old troubles had returned in a decidedly severer form. On admission there was great cyanosis of the lips, fingers, &c., and some dyspnœa. The superficial veins were very full, and there was slight œdema of both legs. The lungs were emphysematous; there was some crepitation at the base of the left lung, with dry bronchitic sounds higher up. The liver was enlarged. The urine (of specific gravity 1029) contained a little albumin and a few hyaline casts. Brachial systolic blood pressure: 105–125 mm. Hg. Blood examination (Jan. 3rd, 1906): red cells 6,240,000 to the cubic millimetre of blood; white cells 8400. Examination of blood obtained by a small venesection (Jan. 8th, 1906) gave: red cells 6,350,000 to the cubic millimetre; white cells 7400; specific gravity of blood 1062. The viscosity coefficient of the blood was estimated at about 6½ times that of water. Later on (Jan. 23rd, 1906) the patient died rather suddenly when she was very cyanosed and in a drowsy condition, apparently due to chronic carbonic acid poisoning.

Necropsy.—The heart (weight 15 oz.) showed considerable dilatation of the right side and hypertrophy of right and left ventricles. There were old pleuritic adhesions over both lungs, which were emphysematous and engorged with blood and œdema. The liver, spleen, and kidneys showed passive congestion. The left humerus was sawn through horizontally, and the greater part of the bone marrow of the shaft was found to have a dull earthy red appearance. Microscopically the bone marrow showed an increase of the cell elements at the expense of the fat vesicles. This cellular reaction was in great part an erythroblastic one.

CASE 2 (1905).—Man, aged 32 years. He gave a history of having had a cough for the last six months or so, but he had remained at work till two weeks before admission, when he commenced to suffer from severe shortness of breath, with slight swelling of the legs. On admission (April 3rd, 1905) the patient, a strongly built man, had cyanosis and dyspnœa, with a little œdema of the lower extremities. His lungs were emphysematous, his liver was somewhat enlarged, and there was apparently very slight ascites. The urine (diminished in quantity) contained a trace of albumin. There was no fever. Pulse 94, regular and of rather low pressure. Respiration 36. Ophthalmoscopic examination showed great hyperæmia of the retina, and there was one retinal hæmorrhage in each eye (Dr. R. Gruber). The blood (April 6th) showed marked polycythæmia; there were 8,400,000 red cells to the cubic millimetre of blood from the lobule of the ear. The examination of blood obtained by a small venesection on April 10th gave: red cells 6,850,000 to the cubic millimetre of blood; specific gravity (pyknometer method), 1073. The viscosity coefficient (estimated at 19° C.) was greatly in excess of the average. Some hours later the capillary blood from the finger was found to contain 8,150,000 red cells to the cubic millimetre. On April 24th the capillary blood contained 9,470,000 red cells to the cubic millimetre of blood; the white cells numbered 9200; and the hæmoglobin was 155 per cent. The differential count of white cells (two occasions) showed nothing special. The treatment was chiefly by rest in bed, oxygen inhalation (at first), small doses of potassium iodide and ammonium carbonate, Guy's pills, and small powders of camphor and benzoic acid. His general condition improved very greatly, and he was allowed to get up in the ward and also to walk in the garden; the daily quantity of urine increased; his dyspnœa diminished; gradually his cyanosis and polycythæmia diminished likewise; the red cell counts per cubic millimetre of blood were as follows: May 1st, 8,400,000; 10th, 8,144,000; 23rd, 7,712,000; 29th, 6,800,000; June 7th, 6,312,000; 14th, 7,862,400; 29th, 5,625,000.

When I saw the patient on June 29th he had been taking no medicine for the last two weeks. There were a few dry bronchitic sounds to be heard over his lungs. There was no cyanosis. Respiration 25, pulse 72. The brachial systolic blood pressure was 140 mm. Hg. (It had previously varied between 110 and 135 mm. Hg). In this case it is worth mentioning that Dr. A. E. Boycott on two or three occasions kindly examined blood films for the presence of nucleated red cells but with negative results. After June, 1905, the patient was unfortunately lost sight of.

CASE 3 (1912).—Man, aged 42 years, powerfully built, with slight congenital ichthyosis (a familial complaint in his family). His father was said to have died from bronchitis and heart disease, and his mother from bronchitis. In childhood the patient had had measles and whooping-cough, and in adult life he had often had bronchitis. He had always tended to be "short of breath." He thought that he had always been moderate in alcohol. Two years before admission he had had pneumonia or pleurisy on the left side. Seven weeks before admission he suffered from a "cold" with shivering. On admission there was much cyanosis of the face and hands. Pulse 102, respiration 30, temperature 99° F. The cardiac dulness was enlarged to the right, but the heart was evidently covered by emphysematous lung to the left, and the apex beat could not be felt. The heart sounds were muffled; there were no murmurs. The veins in the neck were distended. The lungs appeared emphysematous, and there was some dulness at the base of the left lung. There was slight ascites, and the liver and spleen could not be distinctly felt. The urine, of diminished quantity, was of high specific gravity and showed a trace of albumin. Brachial systolic blood pressure: 110–116 mm. Hg. Blood examination: Hæmoglobin, 95 per cent.; red cells, 6,533,000 to the cubic millimetre of blood; white cells, 8000. The patient remained in the hospital from March 19th, 1912, to his death on August 13th of that year. Diuretin, digitalis, strychnine, small doses of potassium iodide, and oxygen inhalations were tried. The oxygen inhalation (the oxygen was inhaled after passage through warm water) seemed to make little difference. The digitalis likewise did no good. He was tapped occasionally for left pleural effusion, for ascites, and for subcutaneous œdema in the lower extremities. For a time there were crepitations at the base of both lungs and œdema of the trunk and lower extremities. A striking feature of the case was the patient's somnolence; apparently as a result of chronic carbonic acid poisoning he tended to sleep at all hours of the day and night. At one time his general condition greatly improved and he was allowed up in the ward, but suddenly he was seized with epileptiform convulsions,[13] followed by coma and death. A venesection did not help. The highest count of the patient's red cells was on June 7th, 1912 (Dr. G. Dorner), when they numbered 7,253,300 to the cubic millimetre of blood. On that occasion the hæmoglobin was only 80 per cent. (by Sahli's hæmoglobinometer), and the white corpuscles numbered 4700 to the cubic millimetre of blood. Microscopic examination of stained blood films showed slight anisocytosis, poikilocytosis, and polychromatophilia; one nucleated red cell was seen.

The *necropsy* showed enlargement of the heart (weight 19 oz.), relative insufficiency of the mitral valve, but no true valvular disease, and no congenital malformation. There was much pleuritic adhesion on the left side, and apparently commencing pneumonia of the lower lobe of the left lung. The right lung was very emphysematous. The liver was "nutmeggy," and the other abdominal viscera were engorged with blood.

CASE 4 (1904).—Man, aged 26 years, strongly built. On admission dyspnœa, orthopnœa, great cyanosis; engorgement of the venous system generally, especially of the veins of the neck; some ascites; œdema of the lower extremities. The heart sounds were weak; no distinct murmur. There were signs of pulmonary emphysema, and wheezing sounds were heard by auscultation. The liver and spleen were not felt. The urine was concentrated and contained a little albumin. There was no fever. The patient had apparently always been subject to attacks of bronchitis, &c.; he was said to have had "weak lungs." His present severe illness was stated to have commenced eight or nine months previously, and to have become much worse since then. In the hospital the cyanosis, orthopnœa, and œdema increased, and at last the patient fell into a comatose state, apparently due to the chronic carbonic acid poisoning. The blood showed decided polycythæmia. At the end there were slight epileptiform twitchings in both arms and slight rise in temperature.

The *necropsy* showed a heart weighing 18 oz., with much hypertrophy and dilatation of the right side; the veins of the surface of the heart

---

[9] Argentina Médica, 1912, p. 531. I have only been able to see a (French) abstract of his paper. Since writing this, I have received a copy of Dr. F. C. Arrillaga's elaborate thesis on the subject (Buenos Aires, 1912), entitled "Esclerosis secundaria de la arteria pulmonar y su cuadro clinico (cardiacos negros"), kindly sent me by the author.

[10] Possibly middle-aged Jews are altogether more liable than others to chronic asthma and bronchitis and to a plethoric habit of body—a habit of body which amongst Jews is less often than amongst European races accompanied and relieved by excessively free action of the bowels. Corpulent, plethoric-looking Englishmen and Germans (of the "jucy," "beefy" type) are often accustomed to have two or sometimes three evacuations of the bowels every day.

[11] E. Weil: Comptes Rendus de la Société de Biologie, Paris, 1901, vol. liii., p. 713.

[12] Mackey: Birmingham Medical Review, 1907, vol. x., pp. 113, 177.

[13] It may be noted that a brother of the patient is apparently subject to true epilepsy.

were distended with dark blood; there was no evidence of any endocarditis, pericarditis, or congenital malformation. Both lungs showed emphysema, chronic congestion, œdema, and partial collapse. There was much old pleuritic adhesion on both sides and some serous effusion in the right pleura. The liver was "nutmegey" and the spleen was of the firm "cardiac" type. The kidneys were somewhat large and apparently not diseased.

CASE 5 (1904).—Man, aged 42 years, a Russian Jew. Apparently a somewhat similar case to Case 4, but, unfortunately, no blood count was made. During the last days of life there was a semi-comatose condition, apparently due to chronic carbonic acid poisoning. The history was that for about the last four years of life the patient, a rather thin man, had suffered from cough and respiratory trouble.

Necropsy.—The heart (weight 15 oz.) showed dilatation and hypertrophy of the right side. Both the lungs were more or less adherent to the chest walls; there was a good deal of chronic interstitial fibrosis, and some obsolete remnants of tuberculosis were noted. The liver, spleen, and kidneys showed chronic congestion. The mucous membrane of the stomach and small intestine was engorged with blood, apparently as the result of passive congestion, and the stomach and intestine contained slightly altered blood, as if bleeding from the engorged mucous membrane had occurred a little before death.

CASE 6 (1906).—Man, aged 39 years, strongly built. At about the age of 29 years he had commenced to suffer from shortness of breath (asthma?), which he himself attributed to the practice of "coitus interruptus." Since then the respiratory trouble had gradually increased and there had been occasional exacerbations. From the age of 14 years he had been a cigarette-smoker, smoking 8 to 10 cigarettes a day. No history of alcohol or syphilis. On admission (Dec. 29th, 1906) the patient had the physical signs of pulmonary emphysema and bronchitis; there were dry and moist bronchitic sounds. Dyspnœa, orthopnœa, cyanosis. No fever. The liver was somewhat enlarged and there seemed to be a little ascites. The fingers were "clubbed." The urine (diminished in quantity) was free from albumin and sugar. There was muco-purulent expectoration, free from tubercle bacilli. The brachial systolic blood pressure was 105–110 mm. Hg. The capillary blood from a finger showed great polycythæmia; the red cells numbered 9,357,000 and the white cells 11,300 to the cubic millimetre of blood; the hæmoglobin (by Haldane's method) was 115 per cent. Under treatment by rest in bed, small doses of potassium iodide and tincture of lobelia, Guy's pills, oxygen inhalation, and inhalations of friar's balsam, improvement took place. In the second week of February, when he left the hospital, there was still some crepitation over the lower portions of the lungs and there was some muco-purulent expectoration. Respiration about 21; pulse about 100. The radial arteries felt decidedly thickened and somewhat tortuous, but the brachial systolic blood pressure was rather low (about 115 mm. Hg). The liver was apparently no longer enlarged. The amount of urine was rather above the average. The red cells numbered only 6,930,000 in the cubic millimetre of blood. His conjunctivæ had lost much of their congested appearance. The improvement, however, did not last long.

CASE 7 (1910).—Man, aged 35 years, who for the last seven years before admission had been subject to "asthmatic" attacks. In the hospital there was great cyanosis, with dyspnœa, some "clubbing" of fingers and toes, and slight œdema of the feet and the lower part of the body. There was crepitation over the lower portions of the lungs. The heart was enlarged to the right, and there was an apical systolic murmur and a double murmur at the base. The liver was enlarged and there was slight ascites. The urine contained a trace of albumin. Brachial systolic blood pressure 110 mm. Hg. Blood examination (Dr. Dorner, Nov. 28th, 1910): Hæmoglobin (by Sahli's method), 135 per cent.; red cells, 7,683,300 in the cubic millimetre of blood; white cells, 9800. The coagulation time (by Sir A. E. Wright's coagulometer) was 10 minutes. According to Determann's clinical viscosimeter the blood viscosity was greatly above the normal. The patient became less cyanotic, but was very feeble. Œdema had to be drained out of the lower extremities. He died a month after admission.

Necropsy.—The heart (weight 16 oz.) showed great hypertrophy of the right side, so that the two sides were nearly similar in appearance. The mitral valve showed old thickening and retraction and slight recent vegetations. Both pleuræ were almost universally adherent and both lungs were emphysematous. There were some embolic infarctions in the right lung and some chronic fibrosis of the upper part of the left lung (not obviously tuberculosis). The liver was "nutmeggy" and the spleen small and firm, of the "cardiac type." All the viscera were greatly congested.

CASE 8 (1904).—Married woman, aged 33 years. I am indebted to my colleague, Dr. Karl Fürth, for his kind permission to quote this case. There was some evidence pointing to previous indulgence in alcohol. The patient was much cyanosed, and the blood (twice examined) showed polycythæmia. The hæmoglobin was about 130 per cent.; the red cells numbered about 7,000,000 and the white cells about 11,000 to the cubic millimetre of blood. There were crepitations over the lungs. A cardiac systolic murmur was best heard between the apex and the sternum. The edge of the liver could be felt reaching to below the umbilical level. The spleen seemed also to be enlarged, but the edge could not be felt. The urine, diminished in quantity, showed a little albumin and a few tube casts. Ascites developed, and also a suffocative pulmonary condition, which was followed by coma (probably a result of carbonic acid poisoning). A moderate venesection (about 10 oz.) did little, if any, good.

Necropsy.—The heart (weight 17 oz.) was hypertrophied, chiefly on the right side. Both tricuspid and mitral orifices were dilated, and the free borders of both these valves appeared somewhat thickened. Both lungs showed emphysema, bronchitis, and congestion, and (by microscopic examination) a certain amount of chronic indurative pneumonia. There were pleuritic adhesions on both sides, which could, however, be separated. The liver (weight 88 oz.) was "nutmeggy," and the spleen (weight 16 oz.) was enlarged and (by microscopic examination) much congested. The kidneys (weight together 16 oz.) were rather large and (microscopically) showed passive congestion.

CASE 9 (1908).—Man, aged 28 years. For about the last nine years he had been subject to attacks of asthma, which at first recurred every two or three weeks, afterwards more frequently. Of late, however, he had had no regular attack, but continuous shortness of breath. In the hospital he had cyanosis and the signs of pulmonary emphysema, enlargement of the liver, ascites, œdema, and slight albuminuria. There were crepitations at the base of both lungs, and a systolic murmur at the apex of the heart. Blood examination (Nov. 29th, 1908): Hæmoglobin (by Haldane's method), 115 per cent.; red cells, 6,870,000, and white cells 11,300 to the cubic millimetre of blood. He had improved during a first stay in the hospital (March–April, 1906), but did not do well when readmitted in November, 1906. He died in December, 1906.

Necropsy.—The heart showed much hypertrophy and dilatation of the right side; the wall of the hypertrophied right ventricle was almost equal in size to that of the left ventricle. The lungs were emphysematous and the dependent portions were much congested. The liver was enlarged and showed passive congestion. The spleen was firm and of the "cardiac type."

CASE 10 (1904).—Woman, aged 22 years, rather fat and plethoric-looking. She was under the care of my colleague, Dr. Fürth, who has kindly allowed me to mention it. There was a history of previous rheumatism. Her heart was overlapped by emphysematous lung. The liver was much enlarged. The urine was free from albumin and sugar. The red cells numbered 6,500,000 in the cubic millimetre of blood.

CASE 11 (1910).—Man, aged 48 years, fat and plethoric-looking, whose illness was said to have commenced six weeks previously with dyspnœa and cough. The venesection blood contained about 6,200,000 red cells to the cubic millimetre, and its viscosity value (as estimated by Determann's clinical viscosimeter) was about 8·3 times that of water (both at 20° C.). The case was, however, complicated by nephritis and high blood pressure (the brachial systolic blood pressure was 200 mm. Hg). I am not sure whether it really belonged to the present class.

Harley-street, W.

DIFFICULT LABOUR CAUSED BY FŒTAL ASCITES.

BY S. GORDON LUKER, M.D. CANTAB.,
OBSTETRIC TUTOR AND REGISTRAR, LONDON HOSPITAL.

THE patient, a i.-para aged 27, was sent to the London Hospital in the second stage of labour with a history that the fœtal head had been pulled off during attempts at delivery. On examination the general condition of the patient was good. The abdomen was large; the uterus up to the ensiform. Per vaginam, the os was fully dilated, the neck and arms of the fœtus presenting; the fœtal abdomen was enormously distended and cystic, preventing delivery. The condition of fœtal ascites was diagnosed.

An anæsthetic was given and the fœtal abdomen was opened with scissors. Clear fluid was poured out, and after the first gush (three pints at least) six pints were collected. A small fœtus was easily delivered. The fœtus was a small male, its length (without head) being 30 cm. The abdomen was enormously distended, and it was clear that the fluid came from the peritoneal cavity. The bladder was much distended and thickened; its upper margin was 3½ inches above the pubis, nearly up to the umbilicus. It contained a little urine, a drop of which could be expressed with difficulty from the penis. A urethral stricture was encountered near the entrance to the bladder on attempting to pass a bristle per urethram. Both ureters were much dilated; they were in places 1 inch in diameter. The kidneys appeared normal. The liver and the other abdominal viscera appeared normal.

Microscopically a section of the abdominal wall showed chronic inflammation of the peritoneum.

Examination of the fœtal ascitic fluid.—Report by Dr. P. N. Panton: "Reaction alkaline. Specific gravity, 1010. Urea absent. No reducing substance present. Proteids present in large amount, the majority being proteoses, the minority coagulable proteid."

According to Ballantyne,[1] examination of the ascitic fluid in similar cases has rarely been carried out; in two cases albumin was found, but there was no mention of proteose.

Previous health and history of patient.—One child, female, 11 months old, alive and well. Previous pregnancy, labour and puerperium normal. No serious illness previously. Wassermann reaction negative. Urine acid, 1022; urea, 1·67 per cent.; albumin, a trace; no sugar. At the onset of labour the patient thought she was nine months pregnant; for some months she had had some pain and discomfort in the abdomen, and had noticed she was more prominent than during her last pregnancy.

The case was under the care of Dr. R. Drummond Maxwell. The patient was delivered by Mr. G. E. Neligan, resident accoucheur.

Margaret-street, W.

[1] "Antenatal Pathology," p. 358, 1902.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SPECIAL MEETING OF FELLOWS.

Continued Discussion on Alimentary Toxæmia.[1]

A SPECIAL MEETING of the Fellows of the society was held on May 5th, Dr. AMAND ROUTH, Vice-President, being in the chair.

Dr. DAVID SOMMERVILLE said: In my remarks to-day I shall confine myself to a brief consideration of one type of alimentary toxæmia with which I have had some acquaintance during the past dozen years. It is known that when certain individuals of middle age or over consume excessive quantities of proteins—i.e., larger quantities than they can assimilate and finally oxidise—a more or less definite set of symptoms appears, characterised by headache, drowsiness, lassitude, and irritability. Such symptoms are accompanied by abnormal physical and chemical changes in the urine, by physical, chemical, and bacteriological changes in the fæces, and by increased arterial tension. The urine of such a patient is more toxic to animals than normal urine; its surface tension is lowered; it contains increased quantities of indol, indolacetic acid, phenol, skatol, and aromatic oxyacids—all products of intestinal putrefaction. The ratio of ethereal to preformed sulphates is increased. The ratio of ethereal sulphates to total nitrogen is increased. It is known that chlorides, phosphates, sulphates, &c., raise the surface tension of urine; that other bodies, such as urea, sugar, and albumin act indifferently, while aromatic compounds and certain fatty acids depress it. The curve of surface tension runs parallel with the curve of aromatic constituents. The quantity of urine is variable; frequently it is less than normal. The specific gravity is variable; not infrequently it is less than normal. The fæces may be solid and dry, or diarrhœic, or alternate between constipation and diarrhœa. The odour may be highly offensive. Undigested proteins, fats, and carbohydrates are present in varying quantities. A carefully prepared 10 per cent. suspension in normal saline examined microscopically by Gram's method yields a field in which the dominant organisms are B. aerogenes capsulatus and B. putrificus; whereas a corresponding preparation from the fæces of a patient of the same age in perfect health furnishes a field in which the dominant organism is B. coli. The chemical reaction is alkaline. Saponification in KOH solution followed by distillation yields phenols which may be fractionally separated and estimated. Phenols may be recovered from the liver of such a patient (should he die suddenly by accident, &c.) by the same method. Is there a causal relationship between the phenols of the fæces of this patient and his clinical condition? I think there is. It will be objected that the evidence deduced from experiments on animals is not sufficient to show that the indols and other aromatic bodies are toxic. It will be further objected that individuals can be found who excrete large quantities of indols and other aromatic bodies conjugated with sulphuric and glycuronic acids, and yet have no toxic symptoms. These individuals, I reply, completely oxidise their phenols. That the phenols and other aromatic bodies under consideration are produced by the hydrolysis of proteins by anaerobic bacteria must be admitted. These products do not occur in the fæces or urine of the healthy breast-fed infant, whose alimentary tract is free from putrefactive anaerobes. They occur only in small quantities in the healthy adult. In adults, in whom they occur in larger quantities and who suffer from toxic symptoms, they can be greatly lessened and made to disappear by substituting carbohydrates for proteins in the diet. The toxic symptoms decrease and disappear at the same time. In this, as in all other problems of metabolism, the most important matter for consideration is not what happens in the alimentary canal, nor what bodies are found in the urine, but what is constantly happening in the intermediate body tissues—cells of the blood, liver, cord, brain, &c. This patient suffers because he is unable to oxidise sufficiently the aromatic bodies formed in his large bowel by the action of anaerobic bacteria on proteins. Perhaps the epithelial cells of his intestinal mucosa are damaged and fail in their antitoxic action; or being damaged they let through more toxic material than the other portions of the oxidising machinery (hepatic cells, cells of the thyroid, and suprarenals, &c.) can deal with. Or it may be that other parts of the oxidising machinery are at fault. Here I do not distinguish between reducing or synthetic reactions effected in the cells of the intestinal mucosa, in the liver, and elsewhere, and direct oxidation, as such preliminary syntheses and reductions are necessary stages on the way to final oxidation. The statement that dogs and monkeys have been injected with indols and phenols and have failed to show any symptoms of toxæmia in no way militates against the other statement that such products damage certain men. The oxidising powers of the dogs for these bodies are greater than those of the men. The dogs can deal efficiently with the toxins; hence no toxæmia. The quantity of aromatic bodies in the fæces furnishes no information concerning the work that is being done by the oxidising machinery. The latter can only be measured imperfectly by the aromatic sulphates and salts of glycuronic acid in the urine. In cases of intoxication we have no means of accurately determining how much of the phenols, &c., are retained, and in what form they are to be found in the different tissues. That some of them can be obtained in phenolic form from the liver has been noted above. In health the oxidised end products (aromatic sulphates) in the urine go up and down fairly regularly with increase and diminution of putrefactive changes in the large bowel. But in the form of auto-intoxication under consideration these sulphates in the urine do not keep pace with the putrefactive processes in the bowel. On substitution of carbohydrates for proteins in the diet of such cases the ethereal sulphates gradually diminish. That they do not fall suddenly in many cases points to the conclusion that oxidation continues in the tissues after putrefaction has ceased in the gut. Such inability on the part of the oxidising machinery to keep pace with the formation of putrefaction products is a definite indication for the reduction of protein in the diet. In the treatment of this form of auto-intoxication animal proteins may be discarded entirely for a time as they yield larger quantities of phenols than vegetable proteins. Whether in certain cases special forms of acid-producing bacteria should be ingested does not seem to be a matter of primary importance, as carbohydrate dietaries will quickly establish their particular bacterial flora. In conclusion, let me briefly cite one case. A busy professional man, aged 55, who worked seven days a week, suffered for two years from the symptoms described above. He was advised to change his diet and sedentary life. He cut down his proteins, substituting carbohydrates, and took up systematic exercise in the form of golf two days a week. At the end of a year he had recovered his health and the powers for sustained mental work which he had lost. His own statement, then, was: "I now do more work, and of a better type, in five days a week than I previously did in seven." He took no drugs, but by change of diet diminished the production of aromatic compounds in his gut; at the same time he improved his oxidising machinery. Any practitioner of medicine who will educate himself to do these chemical and bacteriological estimations—they are not difficult, only tedious—and will do them systematically as controls on his treatment, will come to the conclusion, I think, that this condition which I have so briefly discussed is in essence a failure of oxidation, and a failure that can be largely corrected.

Dr. ALFRED C. JORDAN said: I propose to give examples of some of the results of intestinal stasis when allowed to advance unchecked. The X ray appearances of the gastro-intestinal tract in intestinal stasis have been described by me in several recent communications,[2] and I should take them for granted were it not that several critics have challenged my work lately, saying that my results are due to my method, and inferring that normal persons would present the appearances I have described. Those who have seen

[1] THE LANCET, March 15th (p. 754), April 19th (p. 1093), April 26th (p. 1163), and May 3rd (p. 1232), 1913.

[2] Proceedings of the Royal Society of Medicine, 1911, vol. v. (Electro-Therapeutical Section), pp. 9–37; THE LANCET, Dec. 30th, 1911, p. 1824; Brit. Med. Jour., June 1st, 1912; Practitioner, February, 1913.

anything of my work at first hand know that this is not so. There are many, however, who have not yet had opportunities of gaining direct experience of the X ray investigation of the gastro-intestinal tract. My results, both normal and abnormal, have stood the test repeatedly of critical examination in the operating theatre. I see many instances of the normal duodenum daily, and the "static" duodenums can be picked out from among the normals with the greatest certainty. Similarly with the end of the ileum. I have explained repeatedly how an ileal kink is to be diagnosed on fluorescent screen observation, and how a genuine kink due to bands is to be distinguished from an apparent sharp angle due to the manner in which the shadow of the ileal coil falls upon the photographic plate. My description of the duodenum and my X ray photographs of the duodenum have been specially favoured with criticism, but it is noteworthy that none of my critics appear to have applied my method; in other words, they have not placed themselves in a position to offer effective criticism. Those who are examining the duodenum in the manner I have described tell me they are confirming my results; this was inevitable, for the observer has no control over the behaviour of the duodenum except to arrange his method of investigation so as to ensure its proper filling. I cannot show a skiagram of the normal duodenum for the reason that the bismuth runs through it so rapidly that it does not remain well filled for more than a few moments; I am compelled to be satisfied with a tracing. I wish to make it clear, however, that a thorough examination of the normal duodenum can be made in all cases; the bismuth can be followed through its four parts, and the outline of these parts can be sketched on the glass covering the fluorescent screen. The manner of passing through the duodeno-jejunal junction can be observed in normal as well as in pathological cases. In severe stasis the duodenum behaves very differently; the bismuth remains in it many minutes, and strong "writhing" contractions occur, but are powerless to overcome the obstruction offered by the kinked duodeno-jejunal junction. It is a simple matter, in such a case, to insert a photographic plate under the fluorescent screen and allow the exposure of the plate to proceed while observing the behaviour of the duodenum. In the case of the normal duodenum the bismuth has run out of it before the photographic plate can be got into position. Dr. Hale White complained that the duodenum was said to be dilated without stating its size or that of the normal duodenum. Such criticism is legitimate, and it is easily answered. I have been measuring the duodenum systematically in my recent cases, taking the length of the second (vertical) part orthodiagraphically, avoiding every source of fallacy, and my figures show that the elongation of this part is very material. The text-book figures for the second part of the duodenum vary somewhat, that usually given being 3 in., while the limits are 2–3½ in. The results of my first morning's measurements were interesting. There were five cases: 1. A large woman, whose duodenum behaved normally (she proved to have no stasis), gave 2¾ in. for the length of the second part. 2. A large man, whose duodenum remained rather full and showed slight regurgitation, and subsequent evidence of slight stasis in the ileum and large intestine; length of duodenum, 3¼ in. 3. A girl with marked stasis (ileal and large intestinal), whose duodenum was large and long, and showed writhing peristalsis; length of duodenum, 5 in. 4. A somewhat older woman with well-marked stasis; length of duodenum, 4¼ in. 5. A young man with moderate stasis in the ileum, but no appreciable delay in the large intestine; length of duodenum, 4 in. His duodenum looked large, and remained full of bismuth; it showed strong peristalsis, and there was repeated regurgitation of bismuth from the fourth and third to the second part of the duodenum. Such measurements are the rule; the normal duodenum measures 2¾–3¼ in., while the "static" duodenum often measures 4–5 in. and more in severe cases. It will be understood that my measurements, being orthodiagraphic, are quite distinct from the apparent length as shown on a photograph or on the fluorescent screen; the orthodiagraphic measurement cannot exceed the actual length of the duodenum, though it may fall short of the true length if the vertical part of the duodenum does not lie accurately in a vertical plane. It is certain that the other parts of the duodenum are elongated too, but exact measurements cannot be given since they do not lie, even approximately, in the plane of the fluorescent screen. All my patients are examined in the same way, using the same amount of bismuth and the same method of giving it in all cases; hence my results are strictly comparable. No fact stands out more clearly, in confirmation of the reality of my results, than the constancy with which duodenal and ileal stasis occur together. If I find a "static" duodenum in a patient I am certain to find some form of ileal stasis in the course of my investigation of that patient. The converse is equally true and equally striking; if I find a patient's duodenum normal in size and behaviour I shall not, at the following examinations, find stasis in the lower ileum. I do not find an ileal kink except in patients whose duodenum is distended and who show clinical evidences of intestinal toxæmia. The duodenal distension leads to pyloric spasm; this is followed by dilatation of the stomach. The weight of the overloaded stomach, together with that of the overloaded transverse colon, subjects the pylorus to a great strain and renders it liable to attack by the microbes which have gained entrance to the duodenum from the large intestine. This microbic invasion is the result of stagnation in the lower end of the ileum. Thus an ulcer may appear at the pylorus. The ulcer leads to great permanent pyloric spasm, and so to increased gastric dilatation. If the liver drops, carrying the pylorus with it, the point of greatest strain is shifted to the lesser curvature, and an ulcer may form there, producing a spasmodic hour-glass constriction, and a very characteristic appearance when examined on the couch with bismuth. The pyloric portion of the stomach is usually very large in these cases, showing that pyloric spasm or stenosis was there before the formation of the ulcer on the lesser curvature. It is not unusual to find two ulcers, one at the pylorus, another on the lesser curvature. These chronic ulcers tend to become cancerous, and in several cases I can show the actual transition from simple chronic ulcer to carcinoma of the stomach. Thus we have a further instance of the importance of intestinal stasis in the causation of cancer. The distended duodenum shown on the same picture is evidence of intestinal stasis, and the ileum and large intestine in all cases afford confirmatory evidence of stasis; moreover, the clinical examination of the patients shows them to be suffering from intestinal toxæmia. In many subjects of intestinal stasis I find marked radiographic evidence of atheroma of the aorta at an unusually early age—another instance of the havoc wrought on the tissues by the intestinal poisons. In Mr. Lane's cases I am never told the results of his own clinical examination until my report has been sent in. The close correspondence between his diagnosis and my findings is surely another striking testimony to the accuracy of his observation and the validity of his deductions.

Mr. ERNEST CLARKE said that intestinal toxæmia was often asserted to be absent because the gross signs were absent. He said that in the eye we had a delicate and true register of intestinal toxæmia. In a large majority of cases where the accommodative power was below normal intestinal stasis was found to exist, and on the other hand, in those where this power was above normal it was found to be absent. Intestinal stasis induced premature hardening of the lens and so lessened its elasticity. He showed diagrams illustrating the accommodative power of over 2000 individuals in whom all errors of refraction had been corrected, and by these diagrams he showed that although there was a distinct grouping of the cases, the mean of which formed a curved line showing the gradual lessening of the accommodative power as age advanced, yet if any particular age was taken a wide range was seen; thus at the age of 40 in one diagram there was one individual with 8·5 D of accommodative power, while another only had 2·5 D. He pointed out that those who had an accommodative power considerably below the mean were suffering from premature senility which showed itself in the arteries, face, hair, and physical powers, while those who had an accommodative power well over the mean were in every sense younger men than their age indicated. He cited the case of a man of 48 who lost half his accommodative power in two years through intestinal stasis, while another man of the same age when the appendix was removed and stasis cured became in a short time a younger man with an accommodative power above normal and the physical powers and outward appearance of a much younger

more than his age indicated. Mr. Clarke had enormous faith in petroleum oil for removing stasis. He left the discussion of the influence of intestinal stasis and pyorrhœa in causing eye diseases to others, briefly mentioning that before any treatment was begun the mouth and tongue must be cleansed and the bowels emptied. He concluded by saying how much humanity would owe to Mr. Lane for his work in connexion with intestinal stasis.

Dr. FREDERICK LANGMEAD spoke of the condition in its relation to the thyroid gland. He instanced tetany as a condition which was connected with thyroid inefficiency on the one hand and with alimentary toxæmia on the other, occurring, as it did, as the result of ablation of the thyroid and also in states of stagnation of the contents of the stomach and colon in dilatation of those organs. In rheumatoid arthritis, also, abnormalities of the thyroid and symptoms like tetany occurred, and rheumatoid arthritis was considered by many not without evidence as connected with alimentary intoxication. He mentioned cases of myxœdema in which severe oral sepsis was associated with pernicious anæmia; another condition which had been ascribed by Dr. William Hunter to lesions in the alimentary tract. He quoted the work of Rupert Farrant on thyroid reaction to toxæmia, and that of McCarrison on its reaction to alimentary toxæmia in particular. Finally, he recorded the good results which had followed treatment of parenchymatous goitre by autogenous vaccines prepared from the patient's own intestinal flora.

Dr. J. M. H. MACLEOD spoke of the Cutaneous Affections Associated with Alimentary Toxæmia. He said that the principal cutaneous affections in which a causal connexion with alimentary toxæmia might be established were urticaria, the so-called toxic erythemata including the group known since the time of Hebra as erythema multiforme, probably certain cases of lupus erythematosus, rosacea, and an acneiform eruption which occurred in adolescence, especially on the face in women. Of these the most frequent were the urticarias and the toxic erythemata, which were now regarded as forms of cutaneous reactions due to a variety of toxic irritants, and often associated with more or less marked visceral disturbances and evidences of a general toxæmia. An attack of urticaria might follow the ingestion of some article of diet, itself definitely poisonous, or it might be caused by some food in itself innocuous but acting harmfully owing to a peculiar susceptibility of the individual or an inflamed state of the gastro-intestinal mucosa. In many cases, however, the food which was responsible for the attack was only harmful owing to a peculiar idiosyncrasy of the individual, and there were comparatively few articles of diet towards which someone might not be found to be susceptible. It had been observed in chronic recurrent urticaria that the primary attack was the result of some gross error of diet, whilst subsequent attacks were called forth by smaller quantities of the same food or some other usually harmless article of diet. This had been explained as an anaphylactic phenomenon, and it had been suggested that the poisonous food substance called forth a response on the part of the organism with the production of antibodies for that special food, and that after a time a second dose even minute in quantity was so rapidly disintegrated by the antibodies that toxic heterogeneous proteids were formed which caused the cutaneous lesions. The toxin might be derived directly from the food, but as a rule it was some unknown substance resulting from the disintegration of the food or some toxic body formed by the cells of the organism. The manner in which the urticarial reaction was produced was uncertain, certain observers considering that it was an angioneurotic phenomenon due to the stimulation of the vasomotor apparatus, either central or peripheral, by the toxin, whilst others regarded it as an acute inflammatory process. Recent experiments had gone far to support the latter theory. It had been proved that a large number of toxic substances, such as peptone, morphine, certain ptomaines, and toxins from pyogenetic micro-organisms, were capable of producing urticaria when injected into the skin, and it had been found in the dog that the cutaneous reaction was independent of nerve influences because it could be called forth equally well after the division of the sympathetic nerve to the part or the removal of the sympathetic ganglion. In the case of the toxic erythemata, grouped under the heading of erythema multiforme, the exact pathogenesis of the lesions was not fully understood. It was generally recognised, however, that they were the result of the action of some toxin circulating in the blood or acting on the walls of the cutaneous blood-vessels. It remained also to be explained why a certain food toxin should cause urticaria in one individual and an erythemato-bullous eruption in another. As a general rule, it might be said that the ordinary food toxins, usually of a proteid nature, tended to cause cutaneous reactions of an urticarial or erythematous type, whilst ptomaines or bacterial toxins from some infective focus were liable to give rise to more severe purpuric lesions.

The remainder of Monday's discussion and the concluding discussion on Wednesday will be reported in next week's issue of THE LANCET.

CLINICAL SECTION.

Exhibition of Clinical Cases.—Arsenic Cancer.

A MEETING of this section was held on May 2nd, Mr. WALTER G. SPENCER, Vice-President, being in the chair.

Dr. F. PARKES WEBER showed a case of Old Quiescent Zoniform Sclerodermia of the Right Lower Extremity. The patient, a woman aged 44, had a hard depressed band, feeling as if due to a cicatricial change in the subcutaneous tissue, situated lengthwise on the right thigh; the surface of the skin over the band was somewhat shiny but of natural colour, and there were no telangiectases. This band, from its point of commencement above the great trochanter (between the great trochanter and the iliac crest), passed inwards, just below and parallel to Poupart's ligament, and then extended in a straight line downwards on the anterior inner aspect of the thigh to end close above the knee. The case was a typical one of localised zoniform sclerodermia (the "morphœa herpetiformis" of Sir Jonathan Hutchinson) of characteristic band-like distribution, resembling that of zona, when one of the limbs instead of the trunk is affected. The parts below the knee in the present case were not involved, but in the loin of the right side there was a depressed area of sclerosed subcutaneous tissue of the size of a five-shilling piece close to the spinal column, above the iliac crest and just below the false ribs. The sclerodermia was apparently first noticed at the age of 11 or 12, and, according to the patient, had not progressed since the age of 18. At the latter period, about the time when the sclerodermia ceased to progress, she underwent an operation for some diseased bone in the right tibia, just above the ankle.

Dr. FILIP SYLVAN showed a case of Pulmonary Tuberculosis treated by Gymnastic Exercises. The patient was a man, aged 24, who had been shown at the March meeting. The whole left lung was affected, and there was a cavity below the clavicle. The upper part of the right lung was affected. In his estimation the patient was now practically cured and fit for work after ten weeks' treatment. Hardly any active signs of the disease remained. Vital capacity when starting treatment, 440 c.c., now 2650 c.c.

Dr. G. H. HUNT showed a case of Complete Heart Block. The patient, an unmarried woman, aged 22, had typhoid fever at the age of 6, but gave no history of rheumatism. All her life she seemed to have been quite free from any attacks of syncope or other symptoms of heart disease. She was admitted into Guy's Hospital for an operation for hammer-toe. On admission she was a well-developed, healthy-looking woman; she was in no respiratory distress, and her appearance did not suggest the presence of any cardiac lesion. The pulse was regular and of good volume and normal tension, and the artery was not thickened. The apex beat was in the fourth space in the nipple line, and there was a mitral systolic murmur. There were no physical signs of disease in the lungs. The urine was normal and the liver was not enlarged. There was no anasarca. The pulse-rate while she was in bed was usually about 50. Electrocardiograms were taken and showed that complete heart block was present; the auricles and ventricles were both beating quite regularly and independently, the auricular rate being 120 per minute, the ventricular 64. The case presented some unusual features. In the first place, it was interesting that the condition should have been discovered quite accidentally. Careful inquiries were made into the patient's previous history, but the condition of her heart did not seem to have given rise to any symptoms whatever; this was particularly remarkable, since she was suffering from a form of heart disease usually considered to be of a serious

nature. Secondly, the pulse-rate was considerably faster than that commonly encountered in cases of complete heart block; the usual rate was about 30 per minute, although rates as high as 80 had been recorded. This rapid ventricular rhythm would seem to point to a favourable prognosis. The epileptiform seizures of Stokes-Adams disease were probably due to temporary cerebral anæmia produced by the slow ventricular action, and consequently patients with a comparatively rapid ventricular rate were less liable to these attacks. Thirdly, the etiology in this particular case was not quite certain. Rheumatism was the only common cause of heart block in patients of this age, and the absence of any history of joint pains did not exclude this origin. On the other hand, this patient had had typhoid fever, and there was a case of heart block recorded occurring in this disease. The operation on the hammer-toe was performed under local anæsthesia.

Dr. HUNT also showed a case illustrating the Prognosis of Extrasystoles. The patient was a male, aged 23. He gave no history of rheumatism. He had been in the habit of taking vigorous exercise all his life and used to row and play Rugby football fairly regularly. He was not a heavy smoker. Except for minor ailments he enjoyed good health until April, 1911, when he was advised to give up rowing because his heart was irregular. On examination it was found that his heart was dilated, the apex being in the fourth space in the nipple line. There were no murmurs, but the first sound was prolonged. The pulse was of good volume, but very irregular. Radial and jugular tracings showed that this irregularity was due to the presence of extrasystoles of ventricular origin, and this was subsequently confirmed by electrocardiographic examination. There were no physical signs of disease in any of the other organs. Dyspepsia, for which he came under observation, was treated, and the patient was instructed to lead a quiet life and to avoid all violent exertion. In July, 1912, he was examined again, and it was found that the heart had diminished in size, but that the pulse was still irregular. At this time the extrasystoles were occurring after every fourth or fifth beat. During the next few months he took rather more exercise, and occasionally played a game of racquets. Tracings taken directly after a game, while the pulse-rate was still about 120, did not show the presence of extrasystoles, but they reappeared a few minutes later when the pulse-rate had fallen. This amount of exercise did not cause the heart to dilate again. Tracings were taken on several occasions during this period, and the frequency of the extrasystoles did not seem to be appreciably affected. During December the patient trained for Rugby football and started playing in January, and continued to do so regularly for two and a half months. Towards the end of January he was examined again; the heart was of normal size and the extrasystoles were still present. By the middle of March, however, the pulse had become absolutely regular, all the extrasystoles having disappeared. There was no dilatation and the heart appeared to be absolutely normal. The case was of interest because of its bearing on the treatment and prognosis of this form of irregularity. It had been recognised for some time that in the absence of other signs of heart disease extrasystoles were not of any serious significance, and were no contra-indication to a certain amount of exercise. On the other hand, their presence did indicate that the heart was not acting quite normally, and in such cases there was naturally some hesitation in subjecting the heart to severe strain. This was particularly the case with Rugby football, as this game probably entailed greater muscular exertion than any other, and not infrequently caused cardiac trouble in men whose hearts were perfectly healthy beforehand. In the case under consideration, however, the heart did not appear to have been in any way injured; indeed, it seemed as if the regular training had had a beneficial effect.

Mr. PHILIP TURNER showed a case of Renal Calculi in both Kidneys. A woman, aged 42, was admitted on Jan. 18th, 1913, for pain in both loins and pyuria. The trouble was first noticed 18 years before, when she passed two small stones and pus was found in the urine. Four years after this she was admitted to the St. Albans Hospital, where another stone was passed. She then remained well for four years, when another stone of the size of a date-stone was passed. The patient then continued in good health until August, 1912, since when she had had pain, worse on the left side, pyuria, and hæmaturia. On admission both kidneys were much enlarged, extending downwards into the iliac fossæ. On the left side a very large calculus could be distinctly felt, while on palpating the right kidney numerous stones could be detected and a sensation like crepitus was readily obtained. The urine was acid in reaction and contained much pus, blood, and albumin. She was very thin, pale, and cachectic. A radiographic examination showed numerous shadows in the right kidney and a large dark area in the left. On Jan 23rd the left kidney was exposed and a large calculus, weighing, when dried, 4 oz., and several smaller ones were removed; two large abscesses containing foul pus were also opened and drained. She stood the operation well and no serious symptoms followed. Four weeks later the right kidney was exposed and 17 calculi and a number of small ones were removed, their total weight being 4 oz. The pelvis of the kidney was distended with foul turbid urine. The patient made good progress, and was discharged on March 13th. Though still a bad colour the patient had put on flesh, and was much better and stronger. The urine was acid in reaction, contained no blood and only a trace of albumin. The wounds were firmly healed, and the kidneys appeared to be about normal in size.

Mr. J. G. SANER showed a case of Congenital Lipoma of the Sole of the Foot with Hypertrophy of the Second and Third Toes. The child, aged 2, was seen at Guy's Hospital by Mr. R. P. Rowlands when 6 weeks old. The condition had been noticed since birth. The tumour appeared to have grown at the same rate as the foot. Operative interference was postponed owing to ill-health.

Mr. SANER also showed a case of Congenital Hypertrophy of the Right Leg—Scoliosis. The patient was a girl aged 13. Her right leg was generally larger than the left. The hypertrophy appeared to affect all the tissues, and gave the child an adult appearance on the affected side. There was a general nævoid condition of the skin. It had been suggested that a resection of some inches of the shaft of the right femur, followed by plating, should be tried. Further suggestions were invited.

Mr. R. J. PYE-SMITH read a paper on Arsenic Cancer, with notes of a case illustrated by a photograph and microscopic slides. The case occurred in a woman who had been treated for some years for psoriasis, probably by arsenic. Hyperkeratosis resulted, and epithelioma some 14 years after treatment had ceased. The probable sequence in such cases was hyperkeratosis, fissuring of the heaped-up patches, and finally epithelioma. The condition had been described by Sir Jonathan Hutchinson.

MEDICAL SOCIETY OF LONDON.

Discussion on the Treatment of Arterio-sclerosis and High Tension.

A MEETING of this society was held on April 23th, Mr. A. E. BARKER, Vice-President, being in the chair.

Dr. F. DE HAVILLAND HALL introduced the discussion, and pointed out that the present paper was a supplement to the paper he read before the society last year on the Use of the Sphygmomanometer in General Practice. The Registrar-General was quoted to show that among males from 45 to 65 years of age there had been an actual increase in the death-rate of late years, and that between the ages of 55 to 65 one-third of the total deaths was due to diseases of the heart and blood-vessels. Dr. Hall discussed the various conditions causing arterio-sclerotic changes in the blood-vessels, such as the increased physical and mental strain of modern life, the larger amount of butcher's meat consumed, the increase in the consumption of tea, coffee, and tobacco, and he alluded to the influence of alcohol and syphilis. Under the head of treatment the necessity of relieving the mental strain was insisted on. Auto-intoxication was considered to play a very important rôle in the production of arterio-sclerosis. Directions were given as to diet; in advanced cases meat and soups made from stock were prohibited; a milk and vegetable diet was recommended. Attention to the quantity as well as the quality of the food was advised. Special directions were necessary should the patient be obese. The amount of tea, coffee, and tobacco consumed must be strictly limited. Alcohol was to be abstained from if possible. An abundant supply of distilled water for drinking was recommended.

Turkish and electric-light baths had a beneficial action, but they must be ordered with caution. The desirability of exercise in the open air was insisted on; failing sufficient exercise, massage was a useful substitute. In the event of an enlarged prostate causing trouble prostatectomy was advocated. Oral sepsis required to be treated. Stress was laid on the necessity of a daily action of the bowels, and of the advantage of an occasional dose of calomel or blue pill. Iodide of potassium was stated to be the drug most generally useful in cases of arterio-sclerosis associated with high tension, and it might be necessary to continue its use in small doses even for years. The addition of bromide to the iodide of potassium was especially useful in the high tension so common at the menopause. Iodides were contraindicated in cases of low tension and failing compensation. In these cases digitalis and strophanthus were useful. Small doses of thyroid extract had given excellent results in obese patients with high tension. Mention was made of the hippurates, guipsine, and Trunecek's serum (antisclerosin) in the treatment of arterio-sclerosis. Dr. Hall was of opinion that in the past the more powerful vasodilator drugs had been indiscriminately and injudiciously employed. It must be realised that high pressure was an effort of Nature to maintain the balance of the circulation under adverse circumstances, and that it should not be interfered with unless there were reasons, such as anginal pains or headache, to justify the employment of these drugs. The abstraction of blood by leeches or venesection was highly commended in suitable cases. Spa treatment and the Nauheim system of treatment were briefly alluded to.

Sir LAUDER BRUNTON said that as the subject of high tension in general had been so well discussed by Dr. Hall, and as many others would wish to take part in the discussion, he would limit his remarks to one point only on high blood pressure. He had been accustomed to regard arterial tension as almost entirely depending upon the force of the heart in propelling the blood and the resistance opposed by the capillaries to its onward flow, this resistance depending almost entirely upon the greater or less contraction of the arterioles or capillaries. He had, however, neglected too much the viscosity of the blood as a factor in raising the blood pressure, but his attention had recently been very markedly directed to this factor by a case which he saw lately. A patient whom he had seen several times and who was suffering from renal inadequacy and high blood pressure became comatose. He advised venesection. When a bandage was placed upon the arm in order to make the veins fill they remained almost empty and could hardly be seen. He kneaded the muscles of the forearm and pressed the venous blood upwards by stroking, but still the veins at the bend of the forearm remained very small, and when one was opened hardly any blood would flow. He knew that a venous condition of the blood greatly increased its viscosity. He therefore directed that oxygen, which was standing near, should be at once administered, with the result that after a few inhalations the blood began to flow more easily and soon flowed in a full stream. As the blood flowed the patient's condition improved and consciousness returned. The improvement continued for some time, although ultimately the patient died. In another case of cardiac asthma he found that the flow of blood through the lungs was greatly increased by the inhalation of oxygen, the tension in the radial artery being only 75 millimetres when the inhalation was begun, and it rose steadily until, in ten minutes, it had reached 150 millimetres. The only remedy which had ever previously given relief to the patient on whom he first employed nitrite of amyl was bleeding, and this always relieved him for one night at least afterwards, and as venesection had been found distinctly to lower the arterial tension he regarded it as a very valuable adjunct in the treatment of cases where the tension was high. The *modus operandi* of it, he thought, had received insufficient attention. The quantity of fluid in the blood-vessels after bleeding was very quickly made up to its normal quantity by absorption from the tissues, so that one could hardly attribute the lowered pressure to this condition, but the quality of the blood was altered, the number of blood corpuscles was considerably diminished, and remained diminished for some time, the length of time probably depending a good deal on conditions of food which had not been thoroughly worked out. It had been found by Determann and Weil that the viscosity of the blood depended upon the number of the formed elements within it, and that its viscosity might be roughly estimated by their enumeration, which was a distinctly easier method than that of employing the viscosimeter. It appeared to him that in considering high tension and the means of lowering it they must direct their attention, not only to the power of the heart and the contraction of the vessels, but must, in addition, pay more attention than perhaps they had hitherto been in the habit of doing to the viscosity of the blood which, by interfering with the easy circulation through the capillaries, would oppose a resistance at the periphery and thus raise the blood pressure in general.

Dr. A. P. LUFF referred to the relation of strain, increased pressure, and toxic agents to arterio-sclerosis and high tension. He drew attention to the fact that the two terms were not necessarily synonymous, as in many cases of gout in elderly persons arterio-sclerosis occurred without high tension, provided contracted granular kidney did not exist. On the other hand, the very highest pressures might be present with quite moderate thickening of the vessels. The most important factor in treatment was to diminish the production of toxins in the gastro-intestinal tract and their absorption therefrom, which was effected by ensuring a free action of the bowels and a reduced consumption of meat and alcohol. Potassium iodide and sodium nitrite were most valuable for the reduction of tension, but vasodilators should not be used in cases of advanced arterio-sclerosis, as in such a high arterial pressure was essential in order to maintain a sufficient circulation of blood through the tissues.

Dr. W. BEZLY THORNE approached the subject from the point of view of two types of the affection under consideration: the atonic and atrophous, marked by a low grade of diastolic and relatively high grade of maximal pressure, and the hypertrophic and obliterative with relatively high diastolic pressure and comparatively small rise of the maximal. In children and young people the first was marked by warm extremities—a full, soft, and somewhat dicrotic pulse tending to undue frequency; the other, by cold and bluish-red extremities, sometimes presenting alternating syncope and asphyxia, and a small and somewhat hard pulse. Those two types might be traced through life modified by certain evolutionary changes. In the first, the myocardium was liable to become weak and dilated; in the second, the changes were of the nature of compensatory hypertrophy. In both, toxæmia played a causative part; but in the sthenic cases alimentary autotoxis was less conspicuously active than in the atonic, and toxæmia of syphilitic, gouty, rheumatic, fibrositic origin might play a leading part, as also abuse of alcohol and tobacco. The fundamental treatment, he said, consisted in the correction and prevention of toxæmia from whatever cause. He spoke in praise of the routine administration of fractional doses of mercurials and of Nauheim baths and exercises, as not only relieving symptoms but promoting repair in early cases. Vasodilators of the nitrite order, he said, were transient in action and useless in regard to repair. They tended to weaken the myocardium and paralyse the tunica media, were useless in sthenic cases, and a source of grave danger in atonic cases, their only therapeutic office being the relief of urgent and transitory symptoms.

Mr. T. B. SCOTT (Bournemouth) said that there was no normal point of pressure in arterio-sclerosis. A double-barrelled method of treatment was of most help, it being directed to brace up the heart as well as to dilate the vessels. Strophanthus and the hippurates gave the best results. Thyroid gland was too seldom used. Suprarenal extract was useful sometimes, even when the tension was raised. He quoted three cases in support of the contention that a bacterial poison caused arterio-sclerosis. All were cases of asthma, a different organism being isolated from the bronchial secretion in each case. Under vaccine-therapy all lost their hypertension, and the respiratory strain was relieved. Overwork and worry were as important considerations as over-indulgence in food and drink.

Mr. W. ARMSTRONG (Buxton) was of opinion that more attention should be paid to the early symptoms. Buxton and Bath waters reduced arterial tension, probably by radio-activity. By adding oxygen to the water at Buxton radio-activity was reinforced with markedly beneficial results. Exercise was all-important. He had been using

a form of treatment in which exercise was obtained without fatigue, with good effect. He spoke of the importance of early recognition of vascular change at a period when, by simple means, it could be kept under control.

Dr. O. K. WILLIAMSON advised that the use of the Riva-Rocci instrument should be accompanied by examination by the finger in all cases. He considered this a matter of great importance in the diagnosis and treatment of high blood pressure. In treatment he advocated the use of an occasional mercurial pill and potassium iodide. Sajodin and iodipin were useful when potassium iodide was not well borne. As a dilator he favoured erythrol-tetranitrate. Guipsine was valuable in some cases.

Dr. A. MANTLE (Harrogate) said it was not necessary to reduce the blood pressure simply because it was raised, as there was in these cases a readjustment of the cardio-vascular system. It was a difficult matter to know when sclerosis was actually present, and important to catch the case in the pre-sclerotic stage. He found that cases did best when attention was directed to the alimentary canal.

Dr. C. O. HAWTHORNE said that arterio-sclerosis was a pathological term and unsuitable for the bedside. He preferred "arterial degeneration." If graphic records were taken they should be not only by the sphygmomanometer, but also by the sphygmograph. Nitrites lessened the blood pressure for only very brief periods. He thought the best drug was four or six drachms of cream of tartar daily.

Dr. WALTER BROADBENT (Brighton) said that one point had not been mentioned—heredity. In some people the blood pressure could not be raised; others were born with high tension. Intermediate cases could, no doubt, be remedied. 70 per cent. of men below 50 had thickened arteries, but only 6 per cent. of women. Between 50 and 60 the numbers were more equal, and between 60 and 70 very nearly equal. Menstruation probably explained this observation.

Dr. J. W. CARR believed that too much attention had been attached to high blood pressure records. Patients did not generally obtain treatment in the early stage because they did not come under observation. It should be recognised that much of the pressure was compensatory. We failed, perhaps fortunately, in all attempts to reduce blood pressure in many cases, for if we attained our object the patient often felt ill until the blood pressure again rose. As to the value of walking exercise, it differed greatly as to whether it was on the level or a gradual ascent. Hill climbing was much more valuable than walking on the level.

Dr. HALL briefly replied.

OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Annual Meetings.

THE first meetings of this society under the revised constitution were held on April 24th and 25th at the home of the Royal Society of Medicine and at the Royal London Ophthalmic Hospital, City-road, E.C., Dr. J. B. LAWFORD, the President, being in the chair.

Mr. FRANK A. JULER read a communication entitled "Acute Purulent Keratitis in Exophthalmic Goitre Treated by Repeated Tarsorrhaphy."—The case was discussed by the PRESIDENT, Mr. H. E. JULER, Mr. R. J. COULTER, Dr. LESLIE J. PATON, Mr. PRIESTLEY SMITH, Mr. E. TREACHER COLLINS, Mr. W. H. H. JESSOP, Mr. N. BISHOP HARMAN, Dr. W. B. INGLIS POLLOCK, and Mr. S. JOHNSON TAYLOR.—Mr. FRANK JULER replied.

Mr. A. W. ORMOND read a paper on two cases of Permanent Hemianopia following Migraine, the patients being young and apparently healthy persons. He referred to three similar cases recorded by Dr. Thomas, of Boston. Mr. Ormond's first case was that of a woman, aged 33, who had suffered from sick headaches all her life, and for 10 years had been subject to very severe migraine. In September last she had a very severe attack, lasting three to four days, with very marked photophobia, but when she recovered she was unable to see anything on her right side. There were no other nerve symptoms, and she was otherwise healthy. The fundi were normal and with some hypermetropic astigmatism corrected she had vision 6/6. There was no defect of the pupil or of the extra-ocular muscles. The condition remained unaltered in February last, but she had not had such severe attacks since her loss of sight. The second case was that of a woman, aged 32, who had had bilious headaches since 18 years of age. After three such attacks at intervals of a week she woke up on August 4th, 1912, with headache still present, and after running to catch a train she found her sight became misty, and when this cleared she was unable to see anything on her left side; but with her refraction corrected she had quite good central vision. Nothing abnormal could be found in her general condition, but in March last the hemianopia remained, though during the interval she had given birth to a child. Spasm of the retinal arteries was considered to be a possible explanation. Observations had been made in patients temporarily blinded by attacks of migraine in which a spasmodic condition of the retinal arteries had been seen with the ophthalmoscope. The probable cause of the blindness in these two cases was a spasm of that branch of the middle cerebral artery supplying the visual centre, resulting in a permanent interference with the visual function of that side, and so leading to blindness on the opposite side.—Dr. GORDON M. HOLMES and Mr. L. WERNER discussed the cases.

Dr. JAMES TAYLOR and Dr. GORDON HOLMES read papers on (1) Conditions Present in Several Members of a Family with Hereditary Optic Atrophy; and (2) Unusual Conditions Associated with Optic Atrophy of the Family Type. The first paper gave an account of two families showing a similar defect in vision. In the first family the members of only one generation were affected. There were four brothers living and two sisters, and of the four brothers three were affected in a similar way, the fields showing the existence of a central scotoma for colours. The discs were pale. In the other members of the family there was nothing to suggest a similar defect. In the eldest of the three affected the only other symptoms complained of were some weakness in the legs and occasional difficulty in controlling the bladder. The reflexes were all normal. In the youngest brother the visual symptoms were the only ones complained of. In the middle brother, besides the visual symptoms there was loss of knee-jerk and a sluggish reaction of the pupil to light, pains in the legs, and analgesia of the lower limbs—signs and symptoms of tabes dorsalis. In the second family the affection of sight was similar, but it was spread over more than one generation. With pale optic discs in the members affected there was a central scotoma for white and for colours. In one member optic neuritis was observed eight years ago. In one family four members were similarly affected, while a fifth had congenital cataract. In a collateral branch three cousins had suffered, and a sister of these cousins had a large family, one of whom suffered from the trouble. Another died from an orbital tumour. Two other cousins, the sons of another sister, suffered from defective sight, apparently the result of defective development. The points emphasised in the paper were (1) the co-existence of family optic atrophy with tabes, yet the absence of any apparent effect of the tabes on the optic nerve in the cases affected; (2) the transmission of the optic atrophy in the female line, as shown by the family tree; (3) the occurrence of migraine in several of the patients affected, and its persistence even after practical blindness had been reached; and (4) the occurrence of other eye defects in members of the family—congenital cataract in one, an orbital tumour in another, and defective eyes in two others.

At the Thursday afternoon session Mr. ANGUS MACNAB read a paper on an operation for the Excision of the Conjunctival Sac and Lid Margins. He said: The conjunctiva and lids are cleansed with hydrarg. perchlor. 1 in 2000. If there be any discharge from the lacrymal sac, the ordinary operation for its excision should precede the treatment of the conjunctival sac. The lids are scrubbed with ether soap and the disinfection is completed by means of benzine. The rapidity and ease with which the operation is performed will greatly depend on the absence of bleeding, and the manner in which the primary incisions are planned will have a considerable influence on the hæmorrhage. A spatula is introduced into the sac, and the lids successively stretched over it as they are incised. I commence with the lower lid, entering the knife about 3 mm. from the lid margin and opposite the junction of the inner quarter with the outer three-quarters of its extent, and cutting freely down on the tarsal plate the incision is carried parallel to

the lid margin to a point just beyond the external canthus; placing the spatula under the upper lid a similar incision is made which will meet the former at the external tarsal ligament. These incisions will pass down into the loose areolar tissue on the surface of the tarsal plates and into the orbit above and below the external tarsal ligament. A pair of narrow sharp-pointed scissors is introduced with one blade above and the other below the external ligament and the incisions are joined, some care being observed not to notch the skin at the angle at the same time. The next step will depend on the condition of the conjunctiva. If it is thickened and glistening white, so as to be readily visible, the edges of the lids can be seized with a vulsellum forceps and drawn inwards and forwards towards the nose, while the conjunctiva is separated from the orbital tissues below with a pair of blunt-pointed scissors until the mass only remains attached at the inner quarter of the lids which was not incised at the commencement of the operation. If the conjunctiva be thin, redundant, folded, and hyperæmic, as is often the case, it would almost certainly be buttonholed by such a procedure, and it is far better to introduce the left forefinger into the conjunctival sac, and thus stretching the membrane separate it from the orbital tissues with the scissors. In these cases there will always be a rather free venous oozing, but as the dissection can be carried out by touch this can be neglected until the sac is thrown inwards, when a pad wrung out of hot water will usually leave the wound dry. The original incisions are now completed by means of a sharp pointed scissors, one blade of which is passed under the skin, and the cuts made so that the lines of the first incisions are continued till they meet just beyond the internal canthus. The scissors are then rotated about a right angle, and the whole mass, consisting of lid-margins, conjunctiva, and tarsal plates, can be removed by a single cut. At this stage the angular vein will be divided and there will be a free hæmorrhage, which can be easily controlled by forceps and ligatures. The wound is then closed by means of four sutures of fishing gut, which pick up the tissues at the bottom of the wound; the dressing is covered with a large pad of wool and a light pressure bandage. Healing almost invariably occurs by first intention, and there is only a thin scar to mark the site of the operation. The operation can also be performed when the remains of a shrunken globe are present; in such cases the globe is pulled forwards and dissected out with the conjunctiva. In cases where the whole globe is present and the operation is being performed originally instead of the ordinary excision, the incisions are made in the same way as before recorded; the lower lid is then pulled up, and the dissection of the tarsal plates and the conjunctiva from the orbital tissues continued up to the attachment of the conjunctiva to the globe, when the capsule of Tenon is opened. The upper lid is then treated similarly and the excision continued by dividing the muscles and the optic nerve as in the usual manner. The completion of the operation is by separating the mass at its inner half in the manner already indicated. The majority of my patients have been asylum patients, but I have used the same operation in the case of a malignant growth at the external canthus which was invading the conjunctiva and the cornea, and in which there was no recurrence one year after the operation. One of my patients had trachoma in both his empty sockets, which contained the remains of shrunken globes. Here the radical cure of the trachoma was achieved by the excision of both conjunctivæ. I have been enormously impressed by the relief given to the patients who had discharging sockets by this operation, and have no hesitation in recommending it to those persons who go about with an empty socket covered with a shade, especially as appearance, too, is greatly improved by this procedure.

Mr. BISHOP HARMAN read a paper entitled "An Analysis of 300 Cases of High Myopia in Children with a Scheme for the Grading of Fundus Changes in Myopia." These cases were collected during educational work in London, and all belonged to the elementary schools, so were socially of the working classes. All had come under observation in connexion with the new schools for myopes; many had been watched for several years. Out of the 300, boys were 46 per cent., girls 54 per cent.—a difference of 8 per cent., which agrees with the difference in the sexes in ordinary vision tests. The bulk of the cases seen were aged 8 to 12 years. Cases in the earlier years were nearly all boys, which suggested a greater care by mothers for their menchildren. The degree of myopia ranged from 4 to 25 D.; the bulk, 64 per cent., were from 6 to 12 D. The extreme degrees were nearly all in girls. Hereditary influence was marked in 9 per cent. Astigmatism, which Mr. Harman considered a most likely exciting or adjuvant cause of myopia, was present in 64 per cent., a far higher proportion than in other defects. Previous keratitis was found in 11 per cent.; congenital defects, such as albinism, colobœma uveæ, dislocated lenses, aniridia, existed in 5 per cent.; squint in 4 per cent.; nystagmus, mostly associated with bad vision, in 7 per cent. The lens had been removed by operation in 3 per cent., but the improvement of vision was not great. Dealing with fundus conditions Mr. Harman criticised adversely their present nomenclature for changes about the disc; he proposed that the fundus should be spoken of as first, second, or third degrees, according as the atrophy at the disc was as wide as one-half the disc diameter, the whole diameter, or greater than that. To this would be added other details about the macula, &c. He showed a chart giving the correlation of refraction and fundus change according to this plan; it bore out his contention. He maintained some definite notation was necessary when these cases came under observation for a definite object such as the regulation of education. Grave cases with lens changes, vitreous opacities, or detached retina numbered 8 cases, or less than 3 per cent.; of these 3, or 1 per cent., went blind, two of them probably by injury to their fragile eyes. A chart was exhibited showing the changes in the myopia of 80 children who had received special education over several years; the number of stationary cases seemed to show that these arrangements were of value in the control of the condition.

The next communication was by Mr. TREACHER COLLINS and Mr. A. C. HUDSON on the Pathological Examination of an Eye with Congenital Anterior Staphyloma. It was illustrated by a number of slides.—Mr. TREACHER COLLINS followed with a paper dealing with Fibrous Tissue Formation in connexion with the Fibro-vascular Sheath and Visible Vessels on the surface of the Iris.—The communication was discussed by Mr. JESSOP, Professor STRAUB (Amsterdam), and Mr. G. COATS.—Mr. COLLINS replied.

Mr. E. ARTHUR DORRELL, in a communication on the Sensory Pupil Reflex in Tobacco Amblyopia, said that the dilatation of the pupil obtained when the skin of any part of the body was stimulated was either in abeyance or obtained only by increased stimuli in tobacco amblyopia. 100 cases were examined by him. The lowest stimuli giving dilatation in the normal eye were obtained from five to seven cells of a constant-current battery, five cells of which gave approximately 3·5 milliampères, the negative electrode being applied to the side of the neck. The cases were divided into three classes as follows:—Class A: Ordinary unselected cases, showing no signs of nervous disease and not suspected of tobacco poisoning. Class B: Cases suspected of tobacco poisoning and showing no signs of nervous disease. Class C: Cases showing signs of nervous disease. In Class A 58 eyes were examined, with the result that in 89 per cent. only five to seven cells were required to produce the reflex. In Class B 121 eyes were examined, and in only 20 per cent. was dilatation obtained with five to seven cells, and in over 50 per cent. of the remaining 80 per cent. no dilatation was obtained at all with the strongest stimulus the patient could stand. In Class C 18 eyes were examined, and in only 22 per cent. was the reflex obtained with five to seven cells, and over 75 per cent. of the remainder gave no dilatation. Owing to the similarity in the results in Classes B and C this test was not a positive sign in favour of tobacco poisoning alone, but should be included in the symptom-complex of locomotor ataxia and allied affections of the spinal cord.

Friday morning was occupied with the discussion of the Vascular and other Retinal Changes in Association with General Disease.

Dr. JAMES TAYLOR opened the discussion by referring to the wide scope of the subject, and said he thought that it would be impossible to discuss it fully in a manner which would be instructive. So he proposed to direct particular attention to thrombosis or embolism of retinal vessels and to raise some points in reference to other conditions embraced in the title of the discussion. Dr. Taylor asked first as to the prognosis in albuminuric cases, and referred to the short duration of

certain cases and the length of life in others. He mentioned a case of albuminuric retinitis which he observed during five years before death occurred. He referred also to diabetic cases, and mentioned a case in which the condition had existed during eight years, the patient being still alive. The condition of "silver wire" arteries described by Marcus Gunn was also alluded to, and a case, seen by Gunn and diagnosed by him, was mentioned as being still alive after nine years. Dr. Taylor then referred to four cases with the opthalmoscopic appearance of embolism of the central artery of the retina. In two of these heart changes were present; in two no such changes existed and there was no albuminuria. Reference was made to the frequent occurrence of the characteristic ophthalmoscopic appearance of embolism of the central artery in which no heart disease could be discovered. Such were probably thrombotic. Eight cases of venous thrombosis were then described. In seven albuminuria with a hypertrophied heart was present; one was alive and in fair health after two years.

MR. WERNER dealt with the subject of Angio-sclerosis, chiefly from the clinical and ophthalmoscopic points of view. The ophthalmoscopic evidences of the disease were first considered and discussed. The necessity of an ophthalmoscopic examination in cases of suspected angio-sclerosis in general practice was emphasised and some cases were related illustrating several points of interest. Obstruction of the retinal circulation was next treated of in connexion with two cases illustrative of different types of the disease. The first was one of embolism of the inferior temporal branch of the central artery, occurring in a man aged about 48. The upper nasal quadrant of the field of vision was suddenly lost. A white plug was seen in the affected branch of the artery, which was almost empty below it. The central vision, however, was never impaired and was still normal 15 months later. A few days after the attack medical examination revealed the presence of a mitral valvular lesion. Mr. Werner's second case was an unusual one of obstruction of retinal circulation in both eyes in a boy aged 11. The left eye became suddenly blind while he was at his lessons and three days afterwards the sight of the right eye went in a similar way. The ophthalmoscopic signs were those of blocking of the central artery, with breaking up of the blood column in the vessels. In the second stage the left optic disc became swollen to such a degree as to resemble a choked disc, and in both eyes white stars of exudation developed at the macula. Perception of light was absent in the right eye for 12 days and in the left for four; nevertheless, vision improved to 6/36 in the former and to 6/24 in the latter. The diagnosis was discussed, and strong evidence brought forward to show that the disease in this case was tubercular in origin.

Mr. GEORGE COATS, after describing the normal structure of the central artery and vein, pointed out that in passing through the lamina cribrosa the elastic membrane of the artery breaks up into a feltwork of fine fibrils, while in the case of the vein elastic tissue disappears entirely from the wall. The normal central vein is little more than an endothelium-lined space in the tissues. Disease of the central artery takes the form of a deposition on the inner aspect of the elastic membrane, of a new tissue composed in varying proportions of cells and fibrils, which encroach on the lumen, usually in an eccentric manner. The elastic membrane itself is often thickened, and elastic fibres are an important constituent of the new tissue. Both the cells and fibrils tend to undergo degeneration; the cells become swollen and fatty, the fibres indistinct and hyalin. Finally, by breaking down, débris-filled cavities may be formed. These changes are always greatest in the outer layers of the new-formed tissue. The primary lesion is probably a proliferation of the endothelium; in the normal central artery of a young person no other tissue is visible within the elastic membrane. The elastic tissue is probably a derivative of these proliferated cells, the case being analogous to the laying down of new layers of the membrane of Descemet by the endothelium of the anterior chamber. Evidence of primary disease of the central vein is very rare, even in cases of obstruction of that vessel. Thickening and infiltration of the wall occur, but not usually at the site of obstruction; they are, therefore, probably secondary, not primary and the cause of the block. In the retinal vessels the commonest form of disease, at least in cases of obstruction of the central vein, is a thickening of the fibrous tissue of the wall-fibrosis. This is the same condition as is found in the central vein, but it differs from the commonest type of disease in the central artery, the change affecting the intima in the central, the media in the retinal, arteries. Endothelial proliferation is also found, but more rarely. It is not improbable that endothelial proliferation is a response to the stimulus of a circulating toxin, fibrosis a strengthening of the vessel wall to resist increased blood-pressure. Hence the frequency of fibrosis in the retinal vessels, which are badly supported, and liable, when glaucoma is present, to be nipped at the edge of the cup. It is probable, also, that endothelial proliferation is represented in the ophthalmoscopic picture by irregularities of calibre without much apparent change in the vessel wall, while fibrosis, by increasing the reflection from the wall, causes brightening of the reflex (silver wire arteries) and in more advanced stages white lines along the vessels. Mr. Coats also demonstrated the pathological features of some cases of obstruction of the central vein, and showed that in early stages a homogeneous thrombus might be found, which subsequently undergoes invasion and organisation from the surrounding connective tissues, or sometimes from the endothelium.

The discussion was continued by Mr. PRIESTLEY SMITH, Professor STRAUB, Mr. BISHOP HARMAN, Mr. F. RICHARDSON CROSS (Bristol), Dr. D. LEIGHTON DAVIES, Dr. J. GRAY CLEGG (Manchester), Dr. A. L. WHITEHEAD (Leeds), and Dr. GORDON HOLMES.—In the afternoon an extensive series of cases were exhibited and discussed at the Royal London Ophthalmic Hospital.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF STATE MEDICINE.

Return Cases of Scarlet Fever.—Method of Registering Hospital Cases.

A MEETING of this section was held on April 11th, Dr. T. P. C. KIRKPATRICK being in the chair.

Dr. J. MARSHALL DAY read a paper on Return Cases of Scarlet Fever, showing the difficulty of deciding whether a case was a return case and when a case was free from infection. He discussed the various methods of disinfecting a patient before discharge, described his procedure, and insisted on the possibility of conveying infection through the breath for some time after leaving an infection ward.—Dr. KIRKPATRICK said that the form of scarlet fever experienced in Dublin recently was mild. There appeared to be considerable laxity in the treatment and management of patients as compared with 20 years ago, yet the seriousness of the disease was often brought home to us through its many complications. Personally, he had always experienced the greatest difficulty in deciding when a patient was free from the disease, and he did not think that this question would ever be satisfactorily settled until the specific cause of the disease could be ascertained. He isolated patients for at least six weeks, no matter how well they appeared; but he would consider the patient infectious as long as any abnormal discharge continued. After the patient had been treated with antiseptics he considered it unlikely that any infection would remain in the epidermis.—Mr. O'CONNELL J. DELAHOYDE did not agree with Dr. Day that the breath conveyed infection, and he considered six weeks scarcely sufficient to free a patient from infection.—Mr. G. P. COPE gave two instances of doubtful return cases of which he had experience.—Dr. W. M. CROFTON said that during two severe epidemics of scarlet fever, under precautions similar to those indicated by Dr. Kirkpatrick, he did not meet with a single return case. As to the cause of the disease, it was known that the complications gave a culture of streptococcus.—Dr. J. A. MATSON said that owing to the layman's dread of peeling patients had to be kept in hospital often as long as two and a half months. He thought there was truth in what Dr. Day had said regarding infection by the breath.—Dr. W. A. WINTER had tried with apparent success the method advocated by Dr. Robert Milne, the medical officer of Dr. Barnardo's Homes, of carefully swabbing the throat,

syringing the nose with antiseptics, and anointing the body with either carbolic or eucalyptus oil. Dr. Milne was wont to have his operation cases side by side with his scarlet fever cases in hospital, yet infection never spread.—Dr. T. T. O'FARRELL had recently met with two cases of diphtheria in which he got bacilli from the nose and ear. Two months seemed a long time to keep a person in for discharge from the ear. He inquired if Dr. Day had experience of vaccine treatment in cases of discharge from the ears.—Dr. DAY, in replying, said he had tried many cases with vaccines; in some cases they acted wonderfully, in others they did not seem to make the slightest improvement. He considered scarlet fever not a mono-infection; many of the cases met with were complicated with diphtheria.

Dr. O'FARRELL, in a paper on a Method of Registering Hospital Cases, pleaded for a uniformity in, and combination of, the valuable statistical material obtainable from Dublin hospitals. He described the method adopted at St. Vincent's Hospital, which, though neither original nor perfect, worked satisfactorily. It was based on the card-indexing system, and the working of the details was distributed over a number of people, the amount of work for each individual being small. The details of the method are briefly as follows:—1. Cases are divided into males and females, the method of registration for each being the same. 2. Each patient on admission is provided with the usual history sheets, charts, &c., together with a "coloured card"—red for males and blue for females. 3. At the end of each week the "coloured card" of each new patient, containing preliminary details, is sent to the registrar, who copies the details into the admission and discharge book. He returns the card, with its registration number, to the ward, where it remains with the patient's other notes. 4. At the termination of each case all the notes are completed and sent up to the registrar. 5. The registrar, referring to the registration number, finds each case in the admission and discharge book, enters the date of discharge, diagnosis, date of operation, if any, and result in the book, with any comment necessary. He also fills in the number of the disease as it appears in the College of Physicians' "Nomenclature of Diseases" (a point which facilitates the drawing up of the final report). 6. The registrar files in drawers, on the card-indexing plan, the charts and coloured cards as follows: (*a*) History sheets and other notes according to registration number in serial order in batches of ten, each batch being enclosed in an open stiff paper pocket, special indicators of a remarkable colour being placed at the hundreds intervals; and (*b*) the "coloured cards" alphabetically according to the surname of the patient. At the end of the year the files are cleared, the contents placed in boxes, numbered according to year, and stored on shelves in an easily accessible place. 7. At the end of the year the cases are rearranged according to disease in the "analysis book." The register number of each case is marked down so that all the cases of any one disease treated can be seen at a glance and their case sheets easily referred to if required. 8. The final report is drawn up from the analysis book, the total number of cases of each disease, with their results, being set down.—Dr. KIRKPATRICK said that it had always been a matter of regret that the clinical material available in Dublin was not utilised more fully for research purposes. Every hospital had a method of case-taking, and some such method of filing records as that introduced by Dr. O'Farrell would be invaluable owing to the way in which the information was stored for reference. An advantage of the system was the distribution of the work over a number of individuals. There was a difficulty to be overcome—viz., a uniform classification of diseases. He recommended the paper for the serious consideration of the hospital staffs of the Dublin hospitals.—Dr. T. NEILL said he thought that the system which had been explained would be found useful even to the general practitioner. Records of temperature and pulse might be kept on the same chart by using different colours.—Dr. DAY had found the greatest difficulty in getting students to take notes of cases.—Dr. W. A. O'KELLY said that in Dublin the hospitals were too large, and it was, therefore, very difficult to record cases fully. He referred to the system adopted of recording cases in American hospitals, where elaborate reports on each case were filed for reference.—Dr. MATSON suggested that the duties of registrar to a hospital could best be performed by a medical man, as he would be able to judge if the records were deficient, and could take steps to have any missing details supplied by the person responsible for the omissions.—Dr. F. K. CAHILL considered that the difficulty of keeping elaborate records in Dublin hospitals was a question of finance. He regarded Dr. O'Farrell's system as useful for private practice.—Dr. O'FARRELL, in replying, considered Dr. Neill's suggestion as to the keeping of temperature and pulse on the same chart an excellent one. In gynæcological cases it was very important to record full information of operations, as very little information could be afterwards obtained from a scar. Some of the largest London hospitals had a most elaborate registration system.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—The last meeting of the session of this society was held on May 2nd, Dr. J. Dobson, the President, being in the chair.—Dr. J. G. Greenfield showed sections of Spinal Cord exhibiting subacute combined degeneration, and also Blood Films from a case which had been under the care of Dr. Wardrop Griffith.—Mr. S. W. Daw showed a case of Severe Rickety Deformity of the Legs in a girl aged 17. The patient had been unable to walk up to the time of operation. Osteotomies of femur, tibia, and fibula on both sides were performed, followed by rectification and fixation in splints. Now, one year later, the patient can walk well and is able to earn her living.—Mr. Daw also showed a case of Double Congenital Talipes Equino-varus, previously treated and relapsed. Over-correction with Thomas's wrench was performed, followed by fixation in plaster for many weeks. The patient can now walk well, correction being temporarily maintained by a simple apparatus.—Dr. Wardrop Griffith referred to the case of a young man with Extensive Sarcomatosis. Without discussing the order of onset of symptoms—for this was very doubtful—the patient had on admission a flaccid paraplegia with abolition of superficial and deep reflexes, partial anæsthesia, and some loss of sphincter control. There was slight retraction of the head, with great stiffness of the neck. Facial paralysis of Bell's type on the left side, with some deafness, was present. There was enlargement of the liver and spleen and well-marked optic neuritis. Under the skin of the abdomen many small purple-tinted growths, varying in size up to a small lentil, were found, and under the skin of the scalp a great many masses were found which were not moveable on the cranium. The diagnosis of sarcomatosis, originating probably in one or other of the bones, was confirmed by Dr. M. J. Stewart's examination of the blood and cerebro-spinal fluid.—Cases were also shown by Mr. R. Lawford Knaggs, Mr. J. A. Coupland, Dr. J. B. Hellier, Mr. L. R. Braithwaite, Mr. A. Gough, and Dr. L. A. Rowden.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on April 24th, Mr. Robert Jones, the President, being in the chair.—Mr. F. M. Gardner-Medwin read a note on Mediterranean Fever. The patient had never been in Malta and there was no history of his having taken goats' milk. The micrococcus melitensis was isolated from the urine, and agglutination occurred. The patient had jaundice.—Mr. R. C. Dun read a note on 220 cases of Hernia operated upon in the out-patient room. Since September, 1909, he had operated on 220 cases of children, sending them home the same night. There had been no mortality; all under one year of age had healed by first intention. In two cases there had been suppuration; one had a stitch abscess, the other had broken down on the tenth day apparently from infection when stitches were removed. Mr. Dun used 2 per cent. iodine in chloroform for preparation of the skin. He divided the sac high in the canal and used a stitch to pull the pillars of the ring together. A mattress subcuticular suture was used to draw the wound together. There was no dressing beyond flexile collodion. The child was put on a Thomas's hip-splint to keep it at rest. Mr. Dun thought three months the best age to operate at.—Professor J. M. Beattie read a paper on Relapses in Acute Rheumatism. The tendency to relapse was a widely recognised feature in acute rheumatism. Some relapses were probably reinfections from the throat, but might be due to survival of the infection in the synovial membranes. In 89 post-mortem examinations, where the joints were

examined bacteriologically, 60 had sterile joints. In 12 there were putrefactive organisms or staphylococci, in 17 diplococci or streptococci. Of the 10 streptococcal cases, 9 had a definite rheumatic history. In all definite rheumatic cases an organism could be isolated from synovial membrane of joints, the organism could be grown outside the body, and was still capable of producing rheumatism if kept even for three years. Slides were shown illustrating the effect of the injection of cultures and of cold air on 11 rabbits that had been injected. The injection produced joint trouble which tended to disappear, but exposure to cold would cause relapses. Professor Beattie thought that treatment by salicylates should be continued during the apyrexial period with a view to preventing relapses. He did not think there was much to be hoped from vaccines during the acute periods, but they might be of service during the latent condition of the disease.—Sir James Barr, in congratulating Professor Beattie, alluded to the effect of mechanical strain in determining the site of the attack.—Dr. T. R. Bradshaw thought that treatment by salicylates was not pushed far enough nor continued long enough to prevent cardiac lesions. He agreed that vaccine treatment was of no use in the acute stage.—Dr. N. Percy Marsh had used a streptococcus vaccine in treating children, but had given it up.—Dr. John Hay found it hard to satisfy himself that there was any useful treatment, except rest and the salicylates.—Dr. T. R. W. Armour, Dr. H. Drinkwater (Wrexham), and Dr. A. Gordon Gullan also spoke.—Professor Beattie, in reply, said he had not treated rabbits with salicylates. He had seen chorea in one rabbit, and an organism had been isolated from the spinal cord. Watering the floor of the animal room produced relapses. He thought the organism was an inhabitant of the alimentary canal, and the infection probably came in many cases from the mouth and tonsils.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on April 16th, Mr. W. G. Laws, the President, being in the chair.—Mr. A. R. Tweedie gave a Further Demonstration and Notes on the Functions of the Labyrinth and Cerebellum, based on the methods of Bárány and Ruttin, and illustrated by the diagram evolved by the former observer. The physiological phenomena associated with induced vertical nystagmus and the effect on vertical and horizontal coördination under the influence of rotation with the head erect were first shown in a normal subject. Two patients were then utilised to demonstrate the variations of these phenomena under pathological conditions—both the rotary and cold caloric tests being employed. One of these patients had been operated on for caries of the labyrinth, and the other for extensive suppurative disease of the middle ear coupled with cerebellar abscess. Incidentally, the uses of Bárány's "noise apparatus" could be well shown in both these patients, as in each the cochlear nerve on the diseased side was functionless. Allusion was also made to the puzzling transitory effects of disseminated sclerosis in simulating labyrinthine and cerebellar lesions in certain cases.—Dr. J. Lyn Dimond read a paper on Colloids in Medicine and Physiology, and explained the physical and electrical properties of colloids. Their absorption depended on surface tension. Therapeutic uses of the mercury, silver, platinum, gold, and iron colloids were explained, and a note was made of the use of colloids, silicic and tungstic acids in the treatment of malignant disease.

MEDICO-PSYCHOLOGICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND.—A meeting of the Northern and Midland Division of this association was held at the County Asylum, Lancaster, on April 24th, Dr. J. G. Soutar, the President, being in the chair.—Mr. A. R. Douglas read a paper entitled "Some Suggestions Respecting the Care of the Feeble-minded under the Mental Deficiency Bill, 1913." He defined the different classes of persons who are deemed to be defectives within the meaning of the Bill, distinguishing between idiots, imbeciles, feeble-minded, and moral imbeciles. He then mentioned how these cases had been dealt with up to the present time. He considered that it was by careful classification alone that we could hope to obtain any tangible result from education and training. He thought that a combination of counties forming associated areas should be able to deal with the matter, aided by those institutions already in existence. Each of these voluntary institutions might be used as a centre or filtering ground through which all defectives in the area would pass before being drafted to the other homes or colonies.—The President, Dr. D. M. Cassidy, and others spoke on the subject.—Dr. D. Blair showed an exceptional case of Catalepsy. The patient, a female, was one of three sisters, all of whom had been treated at Lancaster Asylum. She was first admitted from the beginning of 1906 to the end of 1908, and was admitted again in January, 1910; for the past three years she had been insensible. She gave no response, or very slightly at times, to stimuli, and had to be forcibly fed. At present she showed slight indications of returning sensibility.—Remarks were made by various members, and the question was suggested, What is the meaning of these cases? Is this a case of auto-hypnotism due to the domination of frightful hallucinations?—After the meeting Dr. R. G. Rows gave a short demonstration of interesting objects and processes in the pathological laboratory of the asylum.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held in Leeds on April 16th, Dr. W. E. Fothergill (Manchester), the President, being in the chair.—The President referred to the great loss the society had sustained in the untimely death of Dr. A. J. Wallace, of Liverpool, who was an original member of the society and always took a very active part in its proceedings. He was secretary 1903–04, repeatedly served as vice-president and on the council, and was president in 1908. Many of his important papers were read before this society.—Professor J. B. Hellier (Leeds) described specimens of Dermoid Cyst of Ovary containing bone and teeth; Hypertrophied Labia Cervicis Uteri; and Perithelioma Vaginæ et Vesicæ.—Mr. M. H. Phillips (Sheffield) showed a specimen of Perithelioma of the Uterus.—Mr. W. W. King (Sheffield) showed a specimen of Uterine Myoma undergoing Sarcomatous Degeneration.—Dr. E. O. Croft (Leeds) described cases of Early Cancer of the Body of the Uterus; Epithelioma of Vaginal Portion of the Cervix; and Fallopian Tube with Accessory Ostium.—Dr. W. Fletcher Shaw (Manchester) described a specimen of Hæmorrhages into an Angiomatous Fibromyoma of the Uterus; atheroma of the uterine arteries.—The President read a paper on Operation for Prolapse complicated by Hypertrophy of the Cervix.—Professor Hellier read a paper entitled "A Short Note on the Treatment of Retained Membranes."

ERRATUM.—In the report of the discussion in the Section of Balneology and Climatology of the Royal Society of Medicine on High Blood Pressure which appeared in THE LANCET of May 3rd, Dr. W. Bezly Thorne's statement, "In the course of 15 sphygmometric observations" should read: "In the course of 15 *years of* sphygmometric observations."

ROYAL FREE HOSPITAL.—On Monday, May 19th, at 2.45 P.M., H.R.H. Princess Christian of Schleswig-Holstein will lay the foundation-stone of the Helena Building (new out-patient department) of the Royal Free Hospital, Gray's Inn-road, London, W.C.

ROYAL SANITARY INSTITUTE.—A provincial sessional meeting of the institute will be held at Cheltenham on May 16th and 17th, when a discussion will take place on Aids and Hindrances to the Present-day Effort to Diminish Tuberculosis, to be opened by Dr. J. H. Garrett, medical officer of health, Cheltenham, and Dr. J. Middleton Martin, medical officer of health, county of Gloucester. The chair will be taken at the town hall at 7.30 P.M. on May 16th by Dr. Louis C. Parkes. A sessional meeting will be held at 90, Buckingham Palace-road, on May 20th, when an address on London's Water-supply will be delivered by Mr. E. B. Barnard, M.A., chairman, Metropolitan Water Board. The chair will be taken at 7.30 P.M. by Sir Alexander Binnie. On May 21st a visit will be made to the King George Reservoir, Chingford. A provincial sessional meeting will be held at Chester on May 30th and 31st, when a discussion will take place on Modern Methods for the Purification and Softening of Water-supplies, to be opened by Mr. Joseph Parry, chief engineer, Liverpool Corporation Waterworks.

Reviews and Notices of Books.

Vaccine Therapy: Its Theory and Practice. By R. W. ALLEN, M.D., B.S. Lond., late Clinical Pathologist to the Mount Vernon Hospital for Diseases of the Chest, &c. Fourth edition. London: H. K. Lewis. 1912. Pp. 444. Price 9s. net.

THE present edition of Dr. Allen's book has been so completely altered and rewritten that it constitutes almost a new book. It now professes to give "a systematic account of the applications of vaccine treatment to the bacterial diseases of the various parts of the body," and, to a great extent, it fulfils this aim.

After an introduction, in which he rightly points out that too much attention has been concentrated on the blood and on the substances that kill bacteria after they have gained an entrance into the body, to the exclusion of the factors which prevent their thus establishing themselves, the author proceeds to discuss the nature, source, and functions of the various antibodies, devoting special attention to opsonins. He maintains a modified faith in the utility of estimations of the opsonic index. He next deals with the preparation and administration of vaccines, with the *rationale* of vaccine treatment, and with possible causes for its failure in certain instances. The remainder of the book is devoted to an account of the applications of the method to diseases of the different tracts of the body, successive chapters dealing with diseases of the skin, of the bones and joints, of the digestive tract, of the genito-urinary system, the circulatory system, the eye, the ear, nose, and throat, and of the bronchi and lungs. This arrangement necessitates a certain amount of repetition, as the same micro-organism may attack different parts of the body, and may need, in each, similar treatment, the only divergencies being in the dose and management of the vaccine. It is open to question whether an arrangement on bacteriological lines would not have been more convenient.

The book is clearly written, and gives a good account of the results which have been obtained by a number of workers in the field of vaccine treatment, along with the views of the author himself. These, if we make a slight deduction for the enthusiasm of a specialist writing of his own province, are of real value, and the book may be commended to all in search of guidance as to the conditions in which vaccines may be recommended to their patients even if only as an auxiliary method of treatment. Detailed notice or criticism of the various applications of vaccines here advised is not possible in a brief review. We will note only the attention paid to the control of mixed infection in pulmonary tuberculosis by injections of the invading organisms, to which good results are attributed. This procedure seems worthy of more extensive trial.

A Clinical System of Tuberculosis. By Dr. B. BANDELIER and Dr. O. ROEPKE. Translated from the second German edition by G. BERTRAM HUNT, M.D., B.S. Lond. London: John Bale, Sons, and Danielsson. 1913. Pp. 526. Price 21s.

ALL forms of tuberculous disease now have to be notified, therefore a volume dealing with all varieties of the disease comes at an opportune time. The authors are already known to many practitioners in this country owing to their work on "Tuberculin in Diagnosis and Treatment," and therefore they need no further introduction. A second edition of the work now before us was called for in Germany 18 months after the first appeared.

The first section of the volume is concerned with the etiology of tuberculosis, and an account is given of the histology of tubercles, accompanied by some good coloured illustrations. The second section is occupied with a consideration of pulmonary tuberculosis. Only a brief account is given of the symptoms of the disease, but the remarks on diagnosis are much fuller, and contain valuable information in regard to the methods which may be adopted. A good description is given of the examination of the sputum for tubercle bacilli, stress being laid on the antiformin method. In discussing the diagnosis by means of tuberculin, the opinion is expressed that the cutaneous test is only of value when there is a negative result; that the conjunctival test cannot be recommended, more particularly on account of the damage that may be done to the eye; and that in order to draw reliable conclusions from the subcutaneous tuberculin test a series of four injections should be employed. These conclusions are in accord with the findings of competent observers in all countries. The opsonic index test and complement fixation receive only scant notice. The observations on prognosis are well worthy of attention. The treatment of pulmonary tuberculosis is set forth at some length, but we think that it is to be regretted that the description of the use of tuberculin is not fuller, the authors only giving an outline of the method, and referring the reader to their larger work on the subject. The subject of auto-inoculation, both in its effect on the course of the disease and in its employment in treatment, is entirely omitted.

After some discussion of tuberculosis of the pleura and of the upper air passages, the authors proceed to the consideration of tuberculosis of the digestive organs and of the urogenital organs. In discussing tuberculosis of the kidney and ureter stress is laid upon the difficulty of diagnosis. The discovery of tubercle bacilli in the urine may be fallacious, even if the urine is obtained by means of the ureteral catheter, for the authors maintain that patients suffering from pulmonary tuberculosis and having sound kidneys may sometimes eliminate the bacilli circulating in the blood through the urine. In all doubtful cases diagnosis by tuberculin properly employed may give useful information by producing a focal reaction (renal pain and bleeding) Other sections deal with tuberculosis of the vascular and lymphatic systems, of the skin, of the nervous system, and of the eye.

The general trend of the book is clinical rather than pathological, and as such it will be found of value to those who are engaged in actual practice. Dr. Hunt has carried out the work of translation in a thoroughly satisfactory manner.

Die Krankheiten der Nase und Mundhöhle sowie des Rachens und des Kehlkopfes. Von Dr. ALFRED BRUCK. Zweite Auflage. Mit 252 zum Teil farbigen Abbildungen und 2 Tafeln. Berlin: Urban and Schwarzenberg. 1912. Pp. 472. Price, paper, 14 marks; bound, 16 marks.

Dr. Alfred Bruck's text-book on Diseases of the Nose, Mouth, Pharynx, and Larynx has reached its second edition. The preface to the first edition was dated June, 1907. The original character of the book has not been changed. It is divided into four sections, dealing respectively with the nose and its accessory sinuses, the buccal cavity, the pharynx, and the larynx and trachea. Each section is divided into a general and a special part. The book is intended to meet the requirements of those in general practice. Much space has therefore been given to the general part of each section, inasmuch as it includes the anatomy and physiology of the region, the methods and routine of examination, as well as the general therapy, hygiene, and prophylaxis. The special part deals with the diseases themselves. Although the book has been written

from the standpoint of the general practitioner, nevertheless the discussion of important theories and questions has not been entirely omitted. In the present edition new matter has been added without unduly increasing the size of the volume. Diseases of the accessory nasal sinuses, direct methods of examination of the larynx, trachea, and bronchi, tuberculosis of the larynx, and affections of the voice are amongst the subjects that have been added to, revised, or amplified in the new edition.

The book is well illustrated throughout, and for a clearer understanding of the operative technique the instruments, wherever practicable, have been shown *in situ*. Several new illustrations have been added. Unfortunately, the copy which has been sent to us for review contains some serious faults in pagination. All apparently goes well up to p. 240; then from that page to p. 258 some pages are omitted and others duplicated. With this defect remedied the new edition should be well received. It contains many improvements upon its predecessor.

The Growth of Groups in the Animal Kingdom. By R. E. LLOYD, M.B., D.Sc. Lond., Indian Medical Service. With two coloured plates. London: Longmans, Green, and Co. 1912. Pp. 185. Price 5*s.* net.

THE author is very straightforward in the statement of his aim—which he sets forth as an attempt to help on the new movement in biology, referred to by some as the "Mutation theory, by others as Mendelism." The main theme deals with evolution in a somewhat discursive manner. The author points out that groups of like animals—family groups—such as are small in membership and temporary in duration, are common in nature, and these groups are not considered to be equivalent to species.

The important question of the supposed evil effect of inbreeding is discussed, more especially as to how far it is detrimental to rodents; but the author did not start out with a definite object to inquire into the manner of evolution. He began with plague and the bacillus pestis, a particularly delicate organism, in regard to which rats and mice play an important part, so far as its maintenance and dissemination are concerned. Nor must the flea as a conveyor or transmitter of the disease to man be omitted. As to the Mus rattus this term is applied to the house rats of India collectively, just as the term Homo sapiens is applied to man. The author then describes the species, and concludes that the number of house rats in India may be estimated at "a thousand millions." The enumeration of the colour differences in rats is taken as the basis for discussion, although we cannot measure the importance of characters by their degree of visibility. The characters selected because of their visibility are (1) melanism; (2) albiventralism; (3) caudal albinism and its variations; (4) the breast stripe; (5) the forehead star. Amongst the multitude of normal rats are small family groups of abnormal animals, which probably arose through in-breeding. The author thinks there is reason to believe that the larger groups had once been as the smaller groups in number, and then he proceeds to describe in detail some of the family groups met with, and in so doing he points out how a new group of animals, each possessing some obvious and special characters of their own, can arise among an old group of animals which did not possess these characters. The evidence is presented in detail in several chapters, showing that small groups of abnormal animals, or sports, occur, and although the members of a group are few as a rule the groups are many.

While speaking with enthusiasm of the mutation theory of de Vries, the author utilises the observations of W. L. Tower on the potato beetles of America, published in 1906, who found 1182 sports of nine different kinds amongst 207,891 specimens of the commonest species of this beetle. Many facts lead to the conviction that groups arise from mutants, but such occasions must be rare, for if a thousandth part of the mutants which appear were to form groups the proportion of groups would be much greater even than it is. A chapter—not quite in keeping with the others—is given to the mutation theory and its importance in pathology, and the illustrations used are the nestor parrot of New Zealand, the acquired parasitic habit of the green-bottle fly Lucilia, congenital deformities, such as hare-lip and club-foot, and mental affections, such as dementia præcox.

The view that groups arise from mutants is opposed to the theory of natural selection. If species arise directly from mutants they arise independently of natural selection, so far as that process explains the adaptation of living things to their surroundings. The author's aim is to lessen the belief in natural selection as a creative agency, and the book will be valuable to those who require information to enable them to follow modern biological controversy.

Surgical Operations with Local Anæsthesia. By ARTHUR E. HERTZLER, M.D., Surgeon to the Halstead Hospital, Halstead, Kan., and to the Swedish Hospital, Kansas City, Mo. New York: Surgery Publishing Company. 1912. Pp. 205. Price 12*s.*, post free.

THE use of local anæsthesia for surgical operations is not so widespread as it should be; for the risk of the anæsthetic is enormously reduced, while the loss of sensation on the part of the patient is as complete as when ether or chloroform is employed. One reason for this rarity of use has doubtless been the absence of a convenient account of the methods of administering local anæsthetics, and that want this little book is intended to supply. The author's object has been to describe the technique of local anæsthesia in some of the commoner operations, for the benefit especially of the general practitioner who has to work without the facilities of a hospital. The general principles are given, and then the methods of injection are described and the drugs which may be employed are discussed. The author thinks very highly of quinine and urea, and he tells us that he employs this double salt exclusively in his operative work. It is not so much used in this country as it deserves to be. The latter half of the book is devoted to an account of the employment of local anæsthesia in the different parts of the body.

The book is clear and concise, and should prove useful, while the illustrations will be helpful.

The Treatment of Infantile Paralysis. By OSKAR VULPIUS, M.D., Professor Extraordinary at the University of Heidelberg. Translated by ALAN H. TODD, M.B., B.S., B.Sc. Lond., House Surgeon, Guy's Hospital; late Resident Surgical Officer, Royal National Orthopædic Hospital. With Introduction by J. JACKSON CLARKE, M.B. Lond., F.R.C.S. Eng. London: Baillière, Tindall, and Cox. 1912. Pp. 318. Price 10*s.* 6*d.* net.

THE day is coming, without doubt, when the spread of acute poliomyelitis will be checked by an adequate prophylaxis, and when full knowledge of its organism will cause empiricism to give way to a rational therapeusis. But until that day comes, and even when it does, the evil results of the disease will still manifest themselves in distorted and shrunken limbs, in atrophied and contractured muscles. Professor Vulpius has devoted a large and excellently illustrated monograph to a consideration of the whole subject of the orthopædics of acute poliomyelitis, based on wide personal experience during the last 15 years. The book concerns both the physician and the surgeon, for general medicinal treatment in the acute stage and stage of repair during

the first year is fully discussed, while the use of orthopædic apparatus and the surgery of paralysis are minutely described. The surgeon will find in this monograph chapters on the treatment of paralytic contractures and deformities by tendon lengthening and tenotomy, and on the restoration of function by muscle implantation, arthrodesis, tendon shortening, tendon transplantation, and nerve transplantation. More than half the book is taken up with the special orthopædic surgery of the neck, shoulder, arm, trunk, leg, foot, and so on. Throughout the book there are discussions on certain scientific points of great interest; for instance, there is a research into the mechanism of the production of scoliosis, and another, to which we wish to direct special attention, on the internal anatomy of nerve trunks. It is obvious that the author has endeavoured to apply experimental findings to the practice of orthopædics, a method which is bound to advance technique and thereby to benefit the patient.

It is satisfactory to note the numerous references to the work of authorities in this country, as well as to the work of English instrument makers. The translation is lucid and reads smoothly, and the book as a whole can be recommended as containing an admirable exposition of the science and art of modern orthopædics.

Abriss der Unfall- und Invaliditätskunde des Schapparats. By Dr. EHRENFRIED CRAMER, of Cottbus. Stuttgart: Ferdinand Enke. 1912. Pp. 235. Price 7*s.*

Dr. Cramer has written a useful little book on injuries to the eyes, which is the more valuable as it embodies the results of his own extensive experience. Praun's book was published in 1899, and has hitherto been the authority on the subject. It is not entirely replaced by the present work, which does not profess to be so exhaustive. There is at present no good monograph in English on this subject, which has acquired increased importance since the introduction of the Employers' Liability Act. The ordinary text-books give the essentials of the commoner types of injury, and the pathological aspects of various traumatisms, common and rare, are discussed in Parsons's "Pathology of the Eye." Yet these do not fully cover the ground which a medical witness may be called upon to traverse. Dr. Cramer discusses the insurance aspects of the subject; but here, again, the differences in the conditions of employment in Germany and England detract from the value of the work for English readers. The book would be well worth translating if these sections were re-edited to accord with our requirements. All the important injuries of various kinds are briefly but lucidly treated and short bibliographies given, but the volume contains no illustrations. We have found the information quite reliable.

The Sanitary Officer's Handbook of Practical Hygiene. By Lieutenant-Colonel W. W. O. BEVERIDGE, D.S.O., R.A.M.C., Professor of Hygiene, Royal Army Medical College; Analyst to the Army Medical Advisory Board; and Major C. F. WANHILL, R.A.M.C., late Assistant Professor of Hygiene, Royal Army Medical College. Second edition. London: Edward Arnold. 1912. Pp. 236, interleaved. Price 6*s.* net.

THERE are many sources from which the civilian analytical chemist and bacteriologist can obtain the instruction necessary for the carrying out of the practical work entailed by his position, but as yet there are few meeting the needs of the service branches of the profession, and of those medical men practising in out-of-the-way places abroad; while neither of these groups of medical practitioners has any public analyst to whom may be referred the more difficult examinations.

The book under review has been framed to meet this deficiency, and the methods contained in it provide for almost every contingency. The general scheme followed is that on which the training of all Royal Army Medical Corps officers is carried out in the hygiene laboratories of their college at Millbank, and this has been found satisfactory, both for military purposes and for preparation for the examinations for the Diploma in Public Health now possessed by so many officers in the corps. In view of the improved methods of analysis that have arisen since the first edition was published three years ago, parts of the subject matter have been entirely rewritten, such as the chapters on sewage, the analysis of flour and meat extracts; also a new chapter on chemical disinfectants has been added. Other additions include the examination of table jellies, the quantitative estimation of metals in water, and the bacteriological technique for the diagnosis of diphtheria, plague, and tubercle. Although these additions have somewhat increased the size and price of the book, it is still sufficiently compact to deserve inclusion in the library of every medical officer in the services.

Atlas der Operations-Anatomie und Operations-Pathologie der Weiblichen Sexual Organen. By Dr. WILHELM LIEPMANN, Privat-docent in the University of Berlin. 35 plates. Berlin: August Hirschwald. 1912. Price 24 marks.

Dr. Wilhelm Liepmann has conferred a boon both on teachers and students of gynæcology in the publication of this beautiful atlas. It will prove of great service, not only to the student of the normal and pathological anatomy of the female pelvis, but also to the operating gynæcologist.

The first 14 plates are concerned mainly with the anatomy of the pelvic organs, more particularly in regard to the course and relations of the ureters, and the various structures suspending the uterus and maintaining its position. Among the most interesting and important of these are Plates 7, 8, and 9, which show very clearly what the author terms the endopelvic fascia, or the suspensory fascia of the uterus. Plate 15 is a sagittal section through the pelvis of a woman who died from sepsis after an abortion at the second month, and Plate 16 is a frontal section of a woman who died about the fifth day after delivery. Plates 17–35 show very beautifully some pathological conditions of the pelvic organs. Of these, the most interesting are Plates 19, 20, and 21, dealing with a case of total prolapse of the uterus, and Plates 22, 23, and 24 from a well-marked case of parametritis posterior. In Plate 20 the well-developed levator ani muscle should be noticed, and the fact that although the uterus is outside the body there are no signs of any atrophy of this muscle. Opportunities of obtaining a specimen of parametritis are so rare that the very fine series of plates showing this condition are of great interest. Other pathological conditions illustrated include an ovarian cyst with a twisted pedicle, a myomatous uterus, a small ovarian cyst the size of an apple in Douglas's pouch, and the only made-up plate in the atlas (No. 29) showing a pregnant uterus at the fourth month containing a fœtus. In this case the extirpated uterus has been placed in a pelvis to show its relations to the bones and soft parts, and then drawn. A very valuable series are Plates 30–33, sections through a pelvis with advanced carcinoma and through one in which recurrence of a cancerous growth has taken place after a total hysterectomy. The author has had a number of the specimens reproduced as wax models for teaching purposes.

This atlas should serve a useful purpose, and is an important addition to our knowledge of the anatomy and pathology of the pelvic organs. The plates are well drawn and reproduced, and do credit both to the artist and to the publishers.

A Treatise on Hygiene and Public Health, with Special Reference to the Tropics. By BIRENDRA NATH GHOSH, L.M.S. Cal. Univ., and JAHAR LAL DAS, L.M.S. Cal. Univ. With an Introduction by Colonel KENNETH MACLEOD, M.D. Edin., I.M.S. Calcutta: Hilton and Co. 1912. Pp. 378. Price Rs.3.8, or 5*s.* net.

THERE is room for a small manual of hygiene written in the form of a text-book which has special reference to Indian conditions, and we think Mr. Ghosh and Mr. Das have succeeded very well in their endeavour to supply this want. On general matters they have drawn largely from standard English works, but the selection has been judiciously done, and the authors have incorporated much valuable information from official Indian publications and from their own experience. The arrangement of subjects is orderly and methodical, and the work, considering its size, contains a large amount of necessary information on practical sanitation and the theory of hygiene.

Special attention is given to the prevention of infectious diseases, including malaria and plague. While on the latter subject the findings of the Indian Plague Commission are generally adhered to, reference is given to writers who have held that the Commission laid undue stress on the rat-flea as the prime agent of infection; a note of the experience of pneumonic plague in Manchuria might with advantage have been also included. The chapters on food are useful, and incorporate Mr. Ghosh's previous contributions on diet in India. The great importance of milk as an article of diet in that country is insisted upon, together with the fact that adulteration is the rule, and a pure supply found only under exceptional circumstances. Brandy, we learn, in India has ordinarily not been distilled from wine at all, but is merely coloured and flavoured silent spirit. Under the heading of disposal of refuse the principles of construction of service latrines and privies are fully set out, as well as other methods of excrement disposal. We should be surprised if the trough water-closet in India is free from the drawbacks which have attended its adoption in many English towns, and these might well have been noticed. In a subsequent edition, which is likely to be called for, we should like to see the authors attempt the difficult task of an administrative chapter. It is all to the good to teach that in plague the sick should be isolated from the healthy, infected clothes, articles, and houses should be disinfected, and insanitary conditions and overcrowding prevented, or that milk ought to be obtained under cleanly conditions, or to lay down with precision the requirements of a healthy and well-ventilated dwelling; but it would be very useful also to give practical examples of successful efforts which have been made in Indian administration in the direction of attainment of these ideals.

LIBRARY TABLE.

Annals of Tropical Medicine and Parasitology. Series T.M., Vol. VII., No. 1.—This recent number of the Annals issued by the Liverpool School of Tropical Medicine contains nine interesting articles, the first of which is contributed by Dr. J. W. Scott Macfie, of the West African Medical Staff, on the Trypanosomiasis of Domestic Animals in Northern Nigeria, with illustrations. It appears that trypanosomes presenting the morphological characters of T. brucei, T. vivax, T. nanum or pecorum, and T. theileri have been found in Northern Nigeria in the horse, donkey, sheep, goat, dog, and in various breeds of cattle, T. vivax being the most common form, at least in the western portions of the Protectorate. In horses T. vivax produces a much less serious disease than T. brucei. The dwarf breed of cattle found in certain tsetse-haunted districts of Northern Nigeria, which is credited with a natural immunity to trypanosomiasis, while apparently recovering from infection with T. vivax succumbs to T. brucei. —Dr. J. W. W. Stephens and Dr. H. B. Fantham contribute a paper dealing with further measurements of T. rhodesiense and T. gambiense. These experts, while admitting that their biometric results are not sufficiently conclusive, think that it will be allowed that the two species are distinct; microscopically the two trypanosomes are indistinguishable except by the posterior nuclear character of T. rhodesiense. It is, however, contended that the measurements which they have made are not to be regarded as useless, for they will undoubtedly form the basis for a critical statistical investigation in the future.—Mr. T. F. G. Mayer, of the West African Medical Staff, describes in the next paper a new mosquito-proof and storm-proof house which he has designed for use in the tropics, a sketch of which he also appends.—Major S. R. Christophers, I.M.S., the well-known authority on the subject, makes some interesting contributions to the study of colour marking and other variable characters of anophelinæ, with special reference to the systematic and phylogenetic grouping of species, showing that colour marking, equally with structural characters, can be utilised in natural classification of the anophelinæ and the placing of species in groups to which they have affinities. This article is illustrated by a number of plates. —A study of the posterior nuclear forms of T. rhodesiense (Stephens and Fantham) in rats forms the subject of a paper by Dr. B. Blacklock, of the Runcorn Research Laboratories, and in it he gives the results of a number of experiments showing that the posterior nuclear forms first appear in the blood of rats infected by T. rhodesiense from the sixth to the tenth days of the disease.—Dr. Andrew Balfour, C.M.G., describes the forms of animal trypanosomiasis met with in the Lado Enclave (Western Mongalla), and gives also some notes on tsetse fly traps and on an alleged immune breed of cattle in Southern Kordofan, with illustrative plates.—Sanitation in the Panama Canal Zone, Trinidad, and British Guiana is the subject of a report supplied by Dr. David Thomson, who was sent to these places in 1912 by the Liverpool School of Tropical Medicine in order to study certain malarial problems. In collaboration with Dr. J. Gordon Thomson the same observer furnishes an article on the cultivation of one generation of benign tertian malarial parasites (Plasmodium vivax) by Bass's method, with illustrations.—The last contribution to this number of the Annals is by Dr. H. Harold Scott, Government bacteriologist of Jamaica, who supplies some observations upon several cases of fulminating cerebro-spinal meningitis, which he met with while investigating the nature of a prevalent illness reported under the designation of "vomiting sickness." These cases are of more than usual interest, since another expert had recently reported to the Colonial Office that certain vomiting sickness cases were really yellow fever, and that this disease was still endemic in Jamaica. In THE LANCET of April 19th we discussed this subject, which is now being further investigated by the yellow fever expert, Dr. Harald Seidelin, of Liverpool, who has gone to Jamaica for this purpose under the auspices of the Colonial Office.—An excellent photograph of Professor B. Danilewsky forms a frontispiece to the number.

Minor Maladies and their Treatment. By LEONARD WILLIAMS, M.D. Glasg., M.R.C.P. Lond., Physician to the French Hospital. Third edition. London: Baillière, Tindall, and Cox. 1913. Pp. 396. Price 5*s.* net.—We have already accorded a warm welcome to two previous editions of this attempt to supply the young general practitioner with some of that knowledge of minor ailments concerning which the classical text-books are for the most part silent. Under the apprenticeship system he acquired some knowledge of these matters from the practice of his preceptor, for the class of

ailments referred to—simple coughs and colds, sore-throats, constipation and diarrhœa, indigestion, headache, and such like—bulk just as large in the routine of general practice as for obvious reasons they are lacking in hospital practice. The chapters on Change of Air, the General Health, and Some Drugs and their Uses are full of valuable advice. We note that the author is still convinced of the unsuitability of flannel for underwear. We can heartily repeat our commendation of this book to the young practitioner.

The Right of the Child to be Well Born. By G. E. DAWSON, Ph.D., Professor of Psychology, Hartford School of Religious Pedagogy. London and New York: Funk and Wagnalls Company. 1912. Pp. 144. Price 3*s.* net.—The reader of this little book will find much valuable material in a few pages—pages which are, indeed, almost too few. Many of the passages and ideas might well have been developed at greater length. In spite of this curtailment, however, the book is extremely interesting, and the various aspects of the subject are arranged in logical continuity throughout its ten chapters. The book might almost be termed a primer of Eugenics, for it forms a most interesting introduction to the study of this new science. This appears to have been the author's aim, and he may be said to have accomplished it, and in such a manner as to reflect great credit upon himself. Eugenics must still be regarded rather in the light of an idealistic desideratum than in that of a practical proposition. Professor Dawson, however, while presenting the ideals does not ignore the practical possibilities of the question or the objections which have been raised and which cannot be immediately answered. One could wish, especially, that the suggestions made in the chapter on Religion and Eugenics had been dealt with rather more fully, as well as the means which should be adopted for bringing about the coöperation of the different sections of society, which, as he says, is essential. It is impossible to read the book without feeling that Professor Dawson has many ideas for bringing eugenics into the region of practical politics, and it is therefore doubly regrettable that the development of these ideas has been so limited through want of space. In this country, where the birth-rate and marriage-rate are falling with a rapidity that gives cause for thought, every effort to emphasize the true ideals of matrimony will be welcomed, all the more so when it takes the form of an interesting handbook the price of which brings it within the reach of a great many readers.

JOURNALS AND MAGAZINES.

Zeitschrift für die Gesamte Experimentelle Medizin. Berlin: Julius Springer. Erster Band. Hefte 1 and 2. 1913. Pp. 174.—We offer a warm welcome to this new venture, edited by C. von Pirquet, of Vienna, and F. Sauerbruch, of Zürich, the first part of which is before us. It is proposed to issue one volume per annum, the price being 24*s.* The editors postulate the necessity for practice and theory going hand in hand, and they desire to found a journal which shall record the results of experiment and observation in the whole territory of experimental medicine, but which shall include only those memoirs marking a definite advance and of general medical interest. The papers included in this part deal with the following subjects: Experimental Contributions to the Knowledge of the Action of Bacteriotoxins on the Vascular Wall, by A. Läwen and R. Dittler; Increase in the Size of the Heart in Experimental Stenosis of the Trachea, by H. Ströbel; Electro-cardiographic Studies during Narcosis (with 15 figures), by A. F. Hecht and E. Nobel; Studies on the Action of Aseptic Chirurgical Disintegration of Tissues and Experiments on the Causes of Death after Burns, by Heyde and Vogt; Gaseous Metabolism in a Case of "Tumour of the Stalk of the Hypophysis," by S. Bernstein; Experimental Eosinophilia after the Parenteral Introduction of Different Proteids, by H. Ahl and A. Schittenhelm; On the Physico-chemical Conditions Governing the Action of Bromine in the Organism and a Comparison of the Action of Inorganic and Organic Preparations of Bromine, by H. Januschke and I. Inaba; On Absorption of Fluids from the Pleural Cavity, by Th. Naegeli.

Æsculape.—The March number contains a very interesting historical account of the Military Medical School of Strasburg by Médecin-Inspecteur Ch. Viry. In 1775 there was in Strasburg a military medical hospital, subsequently called the Hôpital d'Instruction, but the École du Service de Santé Militaire, près la Faculté de Médecine de Strasbourg, was founded in 1856. M. Viry traces the development of the school from that time on, with accounts of Koeberlé, J. A. Stoltz, Kuss, Sédillot, Villemin, Dujardin-Beaumetz, A. Laveran, Lacassagne, and other well-known men. The siege of Strasburg naturally affords interesting material to the author. Other interesting articles are on Clairvoyance by Dr. Ch. Guilbert, Oceanography by Dr. Bouquet, a continuation of Professor Guiart's article on the Macabre in Art, the Corset in Art by Professor F. Regnault, and the concluding part of an account of an old album on the celebrated trial of Madam Lafarge. There are also some interesting notes on Leprosy in Oran and Annam, an account of the Jubilee of Professor J. Rénaut, and other miscellanea. The illustrations, as usual, are excellent.

Reports and Analytical Records
FROM
THE LANCET LABORATORY.

(1) HEDIOSIT; AND (2) AMPHOTROPIN.

(MEISTER LUCIUS BRÜNING AND CO., 3, JEWRY-STREET, LONDON, E.C.)

1. Hediosit is an interesting substance which is suggested as a sugar substitute suitable for the use of diabetic patients. It is a white crystalline powder with sweet cooling taste. It is a true carbohydrate having the formula $C_7H_{12}O_7$. It is regarded as a carbohydrate which is completely oxidised even in diabetic conditions. It is described as a compound of the heptose series, being the lactone or anhydride of gluco-heptonic acid. Pharmacological experiments are quoted showing its harmlessness, while after administration there is no evidence of sugar appearing in the urine. On the contrary, it is said to diminish glycosuria. We found that it is easily soluble in water, and yields an abundance of crystals with phenylhydrazine showing a melting-point of 172° C. We found also that it does not reduce Fehling's solution. It shows an acid reaction. It appears to be a definite nutrient possessing a calorific value equal to glucose, from which it is prepared by the action of hydrocyanic acid, subsequent treatment with baryta, and the removal of baryta with sulphuric acid. 2. Amphotropin is a compound of camphoric acid with hexamethylenetetramine, a combination of ammonia and formaldehyde. It is a marked urinary antiseptic, its administration, it is stated, rendering alkaline urine acid, or at least neutral. Amphotropin is a white crystalline powder which is soluble in cold water, but more easily in hot water. The combination with camphoric acid appears to be an advantage. Its principal use has been in cystitis and bacterial invasion of the urinary tract. This firm has recently issued a further edition of their "Compendium of Modern Therapeutical Agents," in which is set out a number

of prescriptions embodying new medicaments of the kind just described which have received the test of clinical experience.

PEROGEN BATH.

(A. AND M. ZIMMERMANN, 3, LLOYD'S-AVENUE, LONDON, E.C.)

Perogen is a convenient mixture for providing an oxygen bath. When the two powders of which it consists are dissolved, according to instructions, in the water of the bath, oxygen is disengaged in fine bubbles. Immersion in such a bath provides a stimulus which affects favourably the circulatory system. The oxygen bubbles differ from the carbonic acid gas bubbles of the Nauheim bath inasmuch as they are much smaller, a condition which should ensure a more effective excitation of the nerve periphery. Oxygen, of course, has advantages over carbonic acid gas, inasmuch as when inhaled it does not give rise to objectionable symptoms, such as headache, vertigo, or palpitation, which sometimes occur in the carbonic acid bath. The bath leads to a diminution of the increased heart volume, and a reduction of pulse-rate and blood pressure has been recorded. It is further stated that the bath has been found useful in nervous affections and conditions of motor excitability. The oxygen is evolved as a consequence of the mutual decomposition of two peroxides.

"ENULE" RECTAL SUPPOSITORIES.

(BURROUGHS, WELLCOME, AND CO., SNOW-HILL BUILDINGS, LONDON, E.C.)

These suppositories afford a very effective and convenient means of administering medicaments per rectum. They are practically transparent and contain, according to our analysis, 95 per cent. of pure glycerin preserved in solid form by a pure bland soap. Their shape is novel and designed on sound lines. The bulbous end is inserted into the rectum first, so that as soon as the greatest diameter has been passed expulsion is practically impossible. The suppositories are wrapped in a neat tin wrapper, which effectually prevents the glycerin from absorbing moisture. The suppositories again are packed in a bottle with a screw top and a specially tight washer. The bottles in turn are contained in an aluminium coated metal case, the lid of which is surrounded at the line of juncture by a strip of aluminised paper, an arrangement which again protects the contents from the moisture of the air. We have received two sizes—one for children and the other for adults. Specimens of enule epinine rectal suppositories have also reached us. These contain one-sixth of a grain of epinine, the synthetic hæmostatic which resembles in its action the active principle of suprarenal gland. Their use is suggested, pending operation, in cases of hæmorrhoids and cancer of the rectum accompanied by hæmorrhage.

SOLUBLE SALTS OF ACETYL SALICYLIC ACID.

(ALFRED BISHOP, LIMITED, 48, SPELLMAN-STREET, LONDON, N.E.)

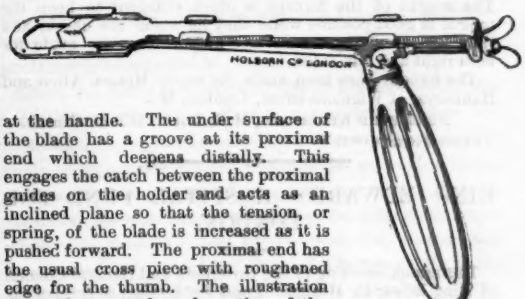
Under the name of hydropyrin we have received a sample of a soluble lithium salt of acetyl-salicylic acid. Our analysis practically confirmed the statement made in regard to its composition. We found, for instance, 3·6 per cent. of lithium present, practically the rest being made up of the acid. It is freely soluble in water. The absorption of the salicylic acid, of course, begins in the alkaline intestinal fluid, the acid of the gastric juice failing to decompose it, and there is therefore no irritation in the stomach. We have also received under the name of kalmopyrin a sample of calcium salt in which we found present 9·56 per cent. of calcium. This, again, was found to be freely soluble in water. The preparations seem well adapted for the administration of salicylic acid. Both preparations occur in the form of fine white powder

New Inventions.

A COMBINED TONSILLOTOME AND TONSILLECTOTOME.

THE tonsillotome which I now describe, and which I showed at the November meeting of the Laryngological Section of the Royal Society of Medicine, was designed as a further modification of Morell Mackenzie's original instrument.

As a tonsillotome it consists of only two parts: the holder with fixed handle and the blade. The holder has been made extra strong so that no bending can take place when the fenestra is firmly pressed around the tonsil. Close to the window are two long guides which bend over the blade, and there are two smaller similar ones a little farther towards the handle. At the handle end are two more which, however, do not bend over the blade. Between the last pair is a catch which engages the end of a groove in the under surface of the blade and prevents it being drawn back out of the holder. At the distal end just beyond the window are two little studs which engage in two notches in the blade, act as stops, and also catch the tonsil when cut. The blade has a pointed edge with the notches already mentioned. The shaft is made in three dimensions: a narrow neck which passes between the middle pair of guides and releases the blade for cleaning; a wider part which plays between and under these guides so that it is held firmly while in action; and lastly, the proximal part which runs between the guides



at the handle. The under surface of the blade has a groove at its proximal end which deepens distally. This engages the catch between the proximal guides on the holder and acts as an inclined plane so that the tension, or spring, of the blade is increased as it is pushed forward. The proximal end has the usual cross piece with roughened edge for the thumb. The illustration shows the general conformation of the blade as either tonsillotome or tonsillectotome, but the distal end of the tonsillotome blade has only the simple thumb piece and no screw arrangement. When the tonsillotome was shown at the Laryngological Section it was suggested that a blunt blade should be supplied with it for use on the principle of Sluder's enucleator. Though I prefer to enucleate tonsils, when that procedure is necessary, either by dissection, snare, or by *morcellement* with forceps according to the class of case, I have endeavoured to meet the wishes of those who like to use a blunt edged tonsillotome for that purpose. An extra blade was made with a blunt edge, and the distal border of the fenestra was re-cut to a more obtuse angle than that of the edge of the blade, which is, moreover, shaped somewhat like that of a scissors. The result of this is that a scissors action is obtained between the varying angles. The proximal end of the blade, instead of the ordinary thumb piece, has a horse-shoe shaped end, broad enough for the thumb to press on comfortably, which allows the screw to pass up between its sides so that the butterfly nut may be tightened against it. The mode of use is as follows. When the tonsil has been sufficiently exposed with Dan McKenzie's or other elevator the fenestra is passed over and the blade pushed as far as it will go. The screw attachment, which has already been adjusted so that the nut presses on the blade after the fewest possible turns, is then hitched into place and the blade forced home by means of the nut. It is here that the scissors action above referred to comes in most usefully when the blunt blade, having forced out the tonsil from its bed, is unable to cut through the often very tough capsule. The illustration shows the arrangement of these parts. When the enucleation arrangement was added it was

found impossible to retain the Kelson position of the handle as it came too close to the chin. It was therefore put in the original Morell Mackenzie position.

The instrument has been fully tested on a large number of cases both as a tonsillotome and as a tonsillectotome, and has given entirely satisfactory results, especially as a tonsillotome. It has been made by the Holborn Surgical Instrument Company, Limited, of Holborn Circus, London, E.C., and can be had either as a simple tonsillotome of only two parts or with the extra blade and screw arrangement as an enucleator as well.

JAMES DONELAN, M.Ch., M.B. R.U.I.

Manchester-square, W.

IMPROVED TONGUE FORCEPS.

THE accompanying illustration shows a new form of tongue forceps which can be readily applied at any stage of an ordinary operation, wound the tongue but little, and are easily held in position, when necessary, by the hand that supports the patient's jaw. They are especially useful in some operations on the nose and throat when assistants are

few, while they are frequently convenient in abdominal and other cases with a tendency to retraction of jaw and tongue. The weight of the forceps is often sufficient to keep the tongue in good position while they lie along the cheek, and they will fit under almost any mask. They are made for both right and left sides.

The forceps have been made for me by Messrs. Allen and Hanburys, of Wigmore-street, London, W.

BERESFORD KINGSFORD, M.D. Durh., D.P.H. Cantab.

Upper George-street, W.

KING EDWARD'S HOSPITAL FUND FOR LONDON.

THE annual meeting of the Governors and General Council of King Edward's Hospital Fund for London to receive the accounts and the report of the General Council for the year 1912 was held at St. James's Palace on April 23rd, the Speaker of the House of Commons being in the chair.

In the absence of Lord Rothschild (the honorary treasurer), Sir JOHN CRAGGS presented the account of receipts and expenditure and the balance-sheet for the year ending Dec. 31st, 1912.

The adoption of the accounts having been formally moved and seconded, was carried unanimously.

Mr. JOHN G. GRIFFITHS (honorary secretary) presented the draft report of the Council for the year 1912, which stated that—

The total receipts for the year were £179,378 17*s.* 7*d.*, made up of donations, £7450 16*s.* 8*d*; contributions to capital, £424 10*s.* 10*d.*; annual subscriptions, £25,700 19*s.* 7*d.*; contribution of the League of Mercy, £18,000; from the Lewis Estate, £36,886 10*s.* 3*d*; legacies (other than legacies to capital), £11,437 11*s.* 6*d.*; interest from investments, £79.278 8*s.* 9*d.*; together with £200 from the trustees of the Bawden Fund. The amount distributed was £157,500, being the same as in 1911, apart from the supplementary distribution of £31,500 made possible in that year by Sir Ernest Cassel's gift. Of this sum the hospitals received £151,000, while the remaining £6500 was distributed amongst consumption sanatoria and convalescent homes taking London patients. The total sum distributed amongst hospitals, convalescent homes, and consumption sanatoria during the last ten years (after deducting grants to the extent of £7409 16*s.* 7*d.* that have been allowed to lapse) is £1,300,340 3*s.* 5*d.*; since the foundation of the Fund a total amount of £1,633,416 8*s.* 5*d.* has been distributed. During the year the amount spent on administration (including the balance of the expenses of the Out-patient Inquiry Committee) was £1 17*s.* 1*d.* per cent. of the total amount received. The corresponding percentage for the whole period since the inauguration of the fund has been £1 6*s.* 2*d.* His Majesty the King, Patron of the Fund, has been graciously pleased to continue his annual subscription of £1000 Her Majesty Queen Mary, Her Majesty Queen Alexandra, His Royal Highness the Prince of Wales, and many other members of the Royal Family are liberal supporters of the Fund. The list of contributions included annual subscriptions of £5000 from Mr. Walter Morrison, £3000 from the Drapers' Company, £1000 from Mr. William Waldorf Astor, and £1000 from the Merchant Taylors' Company, besides a donation of £1000 from the Goldsmiths' Company and an anonymous donation of £1000. The legacies received during the year included £3000 allocated to the Fund by the executors of the late Miss Emma Brandreth, £2199 15*s.* on account of the residue of the estate of the late Mr. George Henry Swonnell, £2000 allocated by the executors of the late Mr. Hugh Alexander Laird, and £1799 12*s.* 6*d.* on account of the residue of the estate of the late Mr. George Low. The total amount received in donations and subscriptions as compared with 1911 showed, excluding contributions to capital and the special donation of £31,500 from Sir Ernest Cassel, a decrease of £9156. It should be remembered, however, that the receipts for 1911 included an anonymous donation of £10,000. Legacies showed a decrease of £37,139 5*s.* as compared with 1911, or of £38,838 8*s.* 6*d.* as compared with the average of the five years 1907 to 1911. In view of the falling off of legacies to a point so far below the average, the maintenance of a distribution of £157,500 was only rendered possible by drawing upon reserves resulting from the receipt in recent years of exceptionally large legacies. The Council would emphasise the fact that the income from investments represents only about one-half the amount of the annual awards, and that for the maintenance of the present rate of distribution the Fund is dependent upon contributions received during the year. The League of Mercy has this year contributed £18,000, being an increase of £1000 over the sum contributed in 1911. During the 13 years of its existence the League has furnished in all £188,000 to the Fund, making, with the sums distributed by the League direct to institutions outside the area of the Fund's distribution a total contributed to hospitals of £200,000. The scheme of the Convalescent Homes Committee for securing beds at consumption sanatoria and placing them at the disposal of London hospitals for the accommodation of patients urgently needing country treatment, has again been extended, the number of beds secured for the coming year amounting to 39 at five sanatoria as against 37 at four sanatoria last year.

The SPEAKER, in moving the adoption of the report, said the report presented some features of disquiet, and on the other hand it had some very satisfactory features about it. It was a little too early, perhaps, to say what the effect of the Insurance Act might be upon the dispositions of their subscribers, but he trusted that, as the novelty of it passed off, they might feel that the demands made upon them were not such as to prevent their continuing to subscribe to the Fund as they did before the Act came into being.

Sir HORACE MARSHALL seconded the motion, which was carried unanimously.

In the absence of Sir William Church (chairman of the Distribution Committee), Sir JOHN TWEEDY moved the adoption of a report of the Distribution Committee upon the application of St. George's Hospital for a grant, which, after reviewing the history of the negotiations between the Fund and the hospital, concluded by saying that the Distribution Committee regret that they see no reason why the Fund should depart from its previous conclusion.

The motion having been seconded by Sir COOPER PERRY was, after discussion, carried unanimously.

In the absence of Lord Bessborough (chairman of the Executive Committee), Sir WILLIAM COLLINS moved the adoption of a report of the committee upon a request from St. George's Hospital for an independent inquiry. He said that this report practically repeated the recommendation of the committee at the last meeting. It meant that the opinion of the executive stood—viz., that it would be unwise to take this matter from the existing reference to the Distribution Committee, and also that it would be undesirable to set up an exceptional form of arbitration, as this would amount to an abdication of the functions of the Council, which under the statute was the final body to decide upon matters relating to the distribution of the Fund.

The adoption of the report was seconded by Dr. FRESHFIELD and carried with one dissentient.

On the motion of Sir WILLIAM COLLINS, seconded by Sir VEZEY STRONG, a resolution was passed on the question of rules and regulations.

A vote of thanks to the Speaker terminated the proceedings.

INTERNATIONAL COMMITTEE FOR POST-GRADUATE MEDICAL EDUCATION.—A short series of medical courses, including all branches, will be given for the first time in Berlin, under the auspices of the Central Committee for Medical Post-Graduate Education in Prussia. These courses will be given by the Lecturers' Association for Medical Vacation Courses from June 19th to 28th. The programme of the series will be published shortly. A fee of 20 marks, or at most 50 marks, according to the number of courses taken, will be required of German physicians (licensed to practise in Germany); foreign medical practitioners will also be admitted as far as space permits on payment of a somewhat larger special fee. Applications should be sent to the Bureau of the Lecturers' Association at Berlin N. 24, Ziegelstr. 10/11 (Langenbeckhaus), and inquiries to the Bureau of the Kaiserin Friedrich-Haus at Berlin N.W. 6, Luisenplatz 2–4.

THE LANCET.

LONDON: SATURDAY, MAY 10, 1913.

Freud's Theory of Dreams.

THE paper read before the Listerian Society of King's College Hospital by Dr. WILLIAM BROWN, of King's College, on FREUD'S theory of dreams, which we recently published,[1] is an able exposition of a difficult subject. The rôle of *vulgarisateur* in the matter of FREUD'S teaching is no sinecure, and Dr. BROWN is to be complimented on the lucidity and insight that characterise his handling of a topic not only complex in itself, but rendered unusually so by reason of an unfamiliar terminology. Whatever may be thought of FREUD'S teaching, and whatever its ultimate fate, it cannot be gainsaid that his enthusiasm for his theory has proved infectious and has already been remarkably stimulating to psychological research. Psychology is greatly indebted to the Viennese professor, and it is to be hoped that opposition to his views will not discount the abiding value of his labours in a little-explored field. His theory of dreams is recognised to be the corner-stone of his psychological system; it is the point at which the normal and abnormal elements in mental life meet. Very briefly, FREUD holds that all dreams are doubles; that the dream as related by the subject, however confused and fragmentary it seems, is only the outward manifestation of elaborate mental processes. What the dreamer is able to narrate is but the "manifest content" of the dream; it is in reality the exteriorisation of a "latent content," made up of elements of high personal significance, which can be recovered by the technique of psycho-analysis The elements of the latent content, the true "dream thoughts," are modified, repressed, distorted, according to laws which, in FREUD'S opinion, are perfectly definite, and for reasons that can readily be understood. One of his fundamental generalisations is that every dream is a wish-fulfilment. Another is that all dreams are egoistic. A third is that the wishes, repressed in waking life but fulfilled in dream life, are predominantly sexual. The processes, or distorting mechanisms, by which the manifest content is derived from the true or latent content, the "condensation," "displacement," "dramatisation," and "regression," are clearly indicated by Dr. BROWN. One of the cardinal features of the theory is the place assigned and importance attached to a "censor." FREUD assumes that certain mental processes are prevented from reaching consciousness by the activity of a certain psychic resistance, which is almost personified by him and dignified as an "endopsychic censor." However convenient the terminology, it is not one of the least difficult conceptions of the theory, this elevation of an element of resistance into a quasi-personality, who sits in judgment on dream thoughts, whose watchful eye they are for ever trying to evade, whose efforts at repression it is apparently their delight to baulk.

[1] THE LANCET, April 19th (p. 1114) and 26th (p. 1182), 1913.

Dr. WILLIAM BROWN deals with conspicuous fairness with some of the many objections that have been advanced against FREUD'S hypothesis. For his own part, he declares he finds it difficult to ignore the possibility of other elements than "wishes" entering into the basis of dreams. If "wish" were replaced by "emotional or instinctive tendencies," Dr. BROWN thinks, the theory would fall much more completely into line with modern psychology. With this opinion we are greatly inclined to agree. There is a distinct tendency to sophistical quibbling in the efforts sometimes made by Freudians to interpret a given dream in terms of a wish-fulfilment, while the statement that in any case every dream fulfils the wish to go on sleeping is beside the point. Dr. BROWN says comparatively little of symbolism in dreams, although FREUD'S theory of dreams admittedly rests on the genuineness or otherwise of the results obtained by psycho-analysis, for which symbolism is all-important. He makes in passing, however, what appears to us a most significant admission, that symbolism is different for different persons and also for different nationalities. If this be so in any degree, as a consideration of many published cases almost forces us to conclude, then a subjective element must enter into symbolic interpretation, and if there is no criterion or standard whereby to judge or compare results, symbolism must lose some at least of that significance which Freudian partisanship attaches to it.

There are not a few facts of dream-life for which the explanation offered by FREUD sometimes appears too mechanistic. It has been objected that the theory rather tends to ignore the obvious influence of external circumstances on the *raison d'être* and course of dreams. Similarly, somatic factors may often be important determinants in dreaming, but FREUD does not always give them their due. HAVELOCK ELLIS has subjected the influence of somatic and external factors to an interesting analysis, and it is not easy to deny their agency in dream evolution, far removed as it is from the repressed wishes of childhood and from antenatal impressions. But Dr. BROWN has done well in contending that much of the antagonism which FREUD'S views have encountered is due either to ignorance or to misunderstanding. It is to be confessed that the wide meaning attached to sexuality by the Freudian school, as equivalent practically to the English "love," is forgotten by some of the opponents of the theory, and that, as Dr. BROWN says, sexuality plays a more important part in the mental life of the individual and the race than some are willing to recognise.

The Need for Research in Tuberculosis.

AT the present time, when much attention is being paid to the subject of tuberculosis, and when the public is being stimulated by vigorous appeals to take part in a campaign which is to lead to the rapid extirpation of the "white plague," it might be thought that our knowledge of the disease was securely established, and that everything necessary for a scientific effort directed towards its control was clearly defined. A very slight consideration of the gaps which still exist in our knowledge of this affection suffices to show the

falseness of any such optimistic conclusion. At the very basis of any attempt to control the spread of an infective disease must lie the rigorous determination of the mode in which the infection is spread and contracted, yet in the case of tuberculosis this knowledge is lacking. The teaching which is in vogue on this subject is founded on little more than guesswork and conjecture. Among the numerous cases of the disease which come before the clinical observer it is the exception rather than the rule to be able to trace a definite source of infection. The very mode of entrance of the bacillus into the human body is equally a matter of dispute, the three great portals of infection, the lungs, the alimentary canal, and the fertilised ovum, all remaining possible modes of entry, and the two former having vigorous supporters among the well-known writers on the subject of tuberculosis in this country and on the continent. If we consider the matter in detail we find that the only well-established facts are the great quantity of bacilli constantly given off in the expectoration of consumptive persons and the great liability of the lungs to be the earliest recognisable seat of the disease in adult human beings. From this to the assumption that infection is usually produced by inhalation of bacilli along with dust in the air is in reality a long step, simple as the inference may seem. It may be asked why, if the bacilli are so widely distributed in the air that infection by inhalation is almost universal in mankind, does not spontaneous infection of similar nature arise in the guinea-pig, an animal specially susceptible to the disease, and one which is kept in captivity, closely confined, in circumstances which would seem ideal for the development of consumption. In monkeys similarly confined the disease is very prevalent. That the establishment of the disease in the lungs does not necessarily imply the entrance of the bacilli by inhalation has been clearly shown by many experiments which demonstrate that particles taken by the mouth and presumably entering by the alimentary canal may be found deposited in the lungs and scarcely at all in other parts. Again, it is needless to point out that the controversy as to the virulence of the bovine strain of tubercle bacilli for the human subject is still the subject of serious controversy among workers in this field; and while the occasional occurrence of infection from this variety of organism is generally admitted, the frequency of such an occurrence is doubted by many careful observers.

When we come to the behaviour of the bacillus in the body and to the effects produced in the living tissues, it would seem at first sight that here at least we are on sure ground. Yet the reverse is true. It is certain indeed that in the vast majority of instances the earliest signs of the disease are manifested at the apex of one or other lung, and again the obvious inference is drawn that for some reason the bacilli are inhaled into this area and are able to establish themselves there, while those which reach other parts of the lung are somehow expelled before they effect a settlement. In spite of ingenious explanations put forward, it is far from clear why this apical settlement of the germs is so universally encountered. We are even justified in asking for further evidence that this localisation is really the primary lesion of pulmonary tuberculosis. It would be interesting to ascertain how many cases of early tuberculous infiltration of one apex are actually seen by pathologists in the course of their performance of necropsies. It is true that we cannot expect patients to die from consumption at a stage when only this slight amount of harm has been done, but in view of the prevalence of the malady it would be likely that not a few persons dying from other conditions and as the result of accidents would show just this early stage. Yet we are inclined to believe that few such are actually seen. The reality of the doubt as to the true starting-point of the disease is shown by the suggestion recently made on the strength of X-ray evidence that it is in the bronchial glands that the trouble originates, spreading thence along the air-passages to the substance of the lung. Finally, in the matter of treatment of pulmonary tuberculosis, how great are the differences of opinion prevailing. This is most notable in respect to the specific remedies for the disease, the various tuberculins. *Quot homines, tot sententiæ* is true as to dosage and as to the preparation most effective in therapeutics, as well as in regard to the cases most suitable for the exhibition of the remedy. Many are the sceptics who deny all efficacy to these bacillary products. On the other hand, there are enthusiasts who would give them to all sufferers whatever the stage and character of their trouble.

Such are some of the deficiencies still remaining to be made up in our knowledge of tuberculosis, affecting the very groundwork of the disease, and it would be easy to point out others if space permitted. It is by experimental research that these problems must be resolved, and one promising field of research is obvious, though work in it presents difficulties of its own. It is clear that the animals which most closely resemble mankind in spontaneous liability to tuberculous infection and in the degree of resistance offered to the attack of the bacillus are cattle. In them the disease arises insidiously and runs a chronic course, while it also invades the respiratory tracts in many instances. It would seem, then, that experimental and observational work on cattle on a large scale constitutes one of the most hopeful modes of procedure with a view to enlarging our knowledge of the human disease. The main difficulty of such research lies in the expense involved. It can only be undertaken by wealthy individuals or corporations owning large herds of cattle and willing to facilitate scientific work by affording all possible opportunities for expert investigation, or preferably by the Government itself. One direction in which such research could be carried out would be an extensive investigation of the value of tuberculins of different kinds in controlling the developed disease in cattle, and subjects for such experiment would be readily found in the numerous beasts found to be tuberculous and now condemned to be slaughtered. Probably it is by the Government alone that such work could be organised, as it would need some relaxation of the regulations as to destruction of infected animals now in force. A second line of investigation, such as into the possibility of genital transmission of tuberculosis, could be undertaken by private owners, while the elucidation of yet other possible sources of infection would need careful planning and coöperation. That much valuable information might thus

be obtained can hardly be doubted, and when the work was once under way many fresh lines of research would certainly open up. For the problems awaiting solution are in reality many, even as our ignorance is great; and it is rather by acknowledging this than by prematurely proclaiming our conquest of the disease that we shall in time achieve success.

Annotations.

"Ne quid nimis."

A LEGISLATIVE CLASSIFICATION OF POTABLE SPIRITS.

IN 1909 the opinion was expressed by a Royal Commission that it was not desirable either in the interests of the trade or of the public to insist upon exact definitions or upon the restriction of particular materials in regard to the manufacture of potable spirits. The Commissioners refused to believe that there was any importance attached to the question whether whisky is pot or patent still, and the value of whisky in the treatment of disease depends, they held, essentially on the ethylic alcohol. In view of these conclusions it will be interesting to watch the progress of new legislation in regard to these matters which it is proposed to introduce into Western Australia. Under the provisions of "The Health Act, 1911–12," it has been decided to bring regulations into effect on July 1st this year which deal with the sale of potable spirits in a very definite way. Brandy, for instance, is defined to be a spirit distilled wholly from grape wine by a pot-still or similar process at a strength not exceeding 40 per cent. overproof, certified to the satisfaction of the Customs to have been matured by storage in wood for a period of not less than two years. Blended wine brandy is defined as a spirit containing not less than 25 per cent. of pure grape-wine spirit, which has been separately distilled by a pot-still or similar process at a strength not exceeding 40 per cent. overproof, the whole to be certified to the satisfaction of the Customs to have matured by storage in wood for a period of not less than two years. The exact percentage of pure grape-wine spirit as above specified is to be stated in every case on the label. Similar requirements are demanded in the case of rum. Gin is to be a spirit distilled from barley, malt, grain, or grape wine, which has been redistilled from juniper berries or flavoured with preparations thereof. The most important suggestions, however, in regard to the control of the sale of potable spirits are in connexion with whisky, and it will be seen that the Government of Western Australia take a quite different view from that expressed by the Royal Commission in this country three years ago. Whisky is to be a spirit distilled from barley, malt, or other grain (which as regards pure pot-still whisky shall be distilled at a strength not exceeding 35 per cent. overproof) certified to the satisfaction of the Customs to have been matured by storage in wood for a period of not less than two years. It is to be sold under one of four designations—viz., (1) pure pot-still whisky; (2) blended whisky containing at least 75 per cent. of pure pot-still whisky; (3) blended whisky containing at least 50 per cent. of pure pot-still whisky; and (4) blended whisky containing less than 50 per cent. of pure pot-still whisky. Very definite standards are set out for the whiskies in classes 1, 2, and 3, while the whisky in class 4 is defined to be one which fails to comply with the standards of the other classes. Pure pot-still whisky is required to contain at least 45 grammes of compound ethers, 3·50 grammes of furfural, and 180 grammes of higher alcohols per 100 litres of absolute alcohol. The methods by which these ingredients are estimated are to be those described in a schedule. They are substantially in accord with those employed in the report of our own Commission on Brandy, which was published in THE LANCET of Nov. 29th, 1902, p. 1503. If in any sample more than one of the ingredients fall below the above limits, this will not be considered a genuine pot-still whisky. Further, if in any case the furfural falls below the above limit, it shall not be less in amount than one-eightieth of the quantity of higher alcohols present, while in other cases the higher alcohols shall not be less than 40 times the quantity of furfural found. A blended whisky containing 75 per cent. of pure pot-still whisky shall similarly not contain less than 45 grammes of compound ethers, 2·6 grammes of furfural, and 160 grammes of higher alcohols per 100 litres of absolute alcohol present; while blended whisky containing 50 per cent. of pure pot-still whisky will be expected to contain not less than 40 grammes of compound ethers, 1·75 grammes of furfural, and 140 grammes of higher alcohols per 100 litres of absolute alcohol present. The proposed measure is certainly a bold one, and yet those responsible for it must have given full consideration to the evidence which was given before the Royal Commission at Westminster and to the conclusions contained in the final report of the Commissioners. It will be interesting to learn how the Western Australian Government propose to deal with a possible practice that may arise—viz., that of adding artificial ethers, furfural, and higher alcohols, which the Government accept, apparently, as earmarks of pure pot-still whisky. The opinion is commonly held in this country that the quality of "bulk" or "bar" whisky sold to the public has grown steadily worse since the report of the Royal Commission appeared.

COMPULSORY CADET TRAINING.

WITHOUT expressing any opinion on the burning topic of universal military service for Britain, a compromise plan in relation thereto, put forth by General Sir Ian Hamilton,[1] suggests a measure which, if carried out, cannot but react beneficially on the coming generation. Sir Ian Hamilton summarises the three great factors of training as the development of the mind, the formation of character, and the building up of the physique. From close observation for many years of the raw material of soldiers he testifies to the vast improvement that has taken place in mental quality since 1870, the beginning of the modern era of education; but as to character—which modern education has not taken adequately into account—he does not find the same firm basis of grit to work upon; while as to physique, he considers it an open question whether the twentieth century could hold its own with the soldiers who marched from Kabul to Kandahar. He urges the importance, in revising our educational methods, of stamping upon the plastic mind of youth a unifying principle of life to embody twin conceptions—a conception of the State in peace and of the everyday duties of the citizen, and a conception of the State in danger and of the citizen's ultimate duty therein. To effect this training he urges the institution of compulsory cadet training in all schools, public and private, which he regards as a prerequisite to voluntary effort later on; for an idea implanted as a seed in the mind of a boy is a real living force, an organic growth, whereas obedience to order by a man is mechanical, and ceases to work when it is no longer being wound up. To cultivate voluntary individual effort in the adult, which is no more spontaneous than life itself, but must have had its generation from others,

[1] National Life and National Training. By General Sir Ian Hamilton, G.C.B. London: P. S. King and Co. 1913. Pp. 55. Price 6d.

it is necessary that the seed should have been sown. The experience of Natal, he contends, is that so far from enforced military training of all boys stimulating "jingoism," its tendency is to subject every able-bodied male to the sobering consideration that he personally may have to pay for war, not through his teapot or the income-tax, but "by his widow pocketing his life insurance proceeds." He classes as the outward and visible signs of the compulsory cadet system, as witnessed in Natal, discipline, self-restraint, good manners, cleanliness, and physical development, all eminently proper objects of education. To these must be added the conception of the dependence of the whole on the parts and of the interdependence of the parts one on the other, thus stimulating a devotion to duty and an abhorrence of, and contempt for, the "slacker." We forbear here to follow Sir Ian Hamilton's argument further and to consider this question as it relates to the defensive needs of the Empire, because that is outside our *métier;* but we do believe that such a course would have a salutary and improving effect on the health, mental, moral, and physical, of the future generation.

PHYSIOLOGY AND THE CINEMATOGRAPH.

THE cinematograph has long since ceased to be merely a popular toy and has taken firm root as a valuable adjunct in teaching. It has been used to illustrate surgical operations, ataxic or other deranged movements, and many processes of experimental physiology and pathology. And since seeing is believing, it is especially adaptable to the demonstration of scientific truths to general audiences, for which purpose it has been much used. But the services of this machine to the advancement of science do not end here, for it also proves to be of considerable assistance in research. This fact was very clearly brought home to a non-medical gathering at the Royal Institution on April 29th by Professor W. Stirling, of Manchester, in a lecture on Recent Physiological Inquiries into Motion and Locomotion. One of the special characteristics of the cinematograph which recommends it for research is, as Professor Stirling showed, the capability of being slowed or accelerated at the will of the operator. Thus, in the analysis of very rapid movements, such as the flight of a bird, a spool of films can be taken at the rate of 300 or more exposures per second, and can be reproduced on the screen at 16 films per second. Thus, the actions photographed are slowed to a twentieth of their actual rate, and the analysis of movements much too rapid to be followed by the naked eye is rendered quite a simple matter. On the other hand, movements which normally take place very slowly, such as the unfolding of a flower bud, can be accelerated almost indefinitely and rendered as apparently rapid as may be desired. Every phase of human locomotion can be subjected to the same analysis with the aid of the cinematograph, and Professor Stirling showed some exceedingly interesting films in which walking, running, and jumping were slowed down 20 times or more; every detail of those processes was rendered available for study, and with absolute faithfulness. In a mixed gathering disease was naturally not depicted, but there seems no reason why this method of "ultra-cinematography" should not be of great service in diagnosis. The various kinds of tremor and of ataxia are often difficult to distinguish one from another by the unaided vision, though the other signs and symptoms of the case usually determine the diagnosis. But it is quite conceivable that such aberrations of movement when submitted to the cinematograph may come to be easily distinguishable one from another independently of the other signs, a refinement of diagnosis which might in some circumstances prove to be of enormous value. To this possible application of the cinematograph the lecturer did not then refer; but doubtless it has not escaped his attention and that of the ingenious French physiologists —M. Bull, M. Comandon, and M. Noguès—who are responsible for several of the beautiful films he showed. Some of the most marvellous of these could be fully appreciated only by those who have had a physiological training, such as the cinema-microphotographs showing the actual growth of heart muscle fibres isolated from the embryonic chick and made to propagate on culture media for 50 days! The whole processes of nuclear and cell division were clearly demonstrated in further films, and the actual immigration of the leucocytes from a portion of spleen isolated and cultivated *in vitro* was also rendered visible in the most convincing manner. The potentialities of the instrument which science possesses in the cinematograph are very fascinating and almost boundless. Professor Stirling's reproduction of a physiological experiment by Professor Richet (to show the effect of asphyxia upon the heart-beat) suggests one reflection. The experimental method is essential, in the opinion of all authorities, for the progress of physiology, pathology, bacteriology, therapeutics, and other allied sciences. For genuine research, experiments upon living animals must be restricted as little as possible in the interests of humanity; but for teaching purposes they might be considerably diminished in number through the agency of the cinematograph.

FORMS OF MENTAL DEFECT.

IN a paper under the above title, read and discussed at a meeting of the Medical Officers of Schools Association last November and now published in pamphlet form, Dr. Frederick Langmead deals with a question which, both in its scientific and in its practical aspects, has many claims just now on medical interest. The problem of mental deficiency has, in fact, reached the stage when it has become urgently necessary to reconsider our stock ideas on the subject, and to ascertain the real value of the data on which these ideas are supposed to be based. And it is a very useful exercise for this purpose to endeavour to arrange the clinical material at our disposal according to some reasoned scheme of classification. The measure of our success in this attempt is also a very fair measure of the extent of our knowledge. Dr. Langmead, in the classification which he propounds, follows very much the lines laid down by other writers on this question. At the outset he frankly admits that a classification on etiological principles is at present an unattainable ideal, and he accordingly falls back on clinical and pathological characters as the only available criteria for distinguishing the varieties of mental defect. But it is evident from the scheme which he suggests that even in this direction we can only go a very short way. A very large majority, as many perhaps as 90 per cent., of the cases of mental defect have to be assigned by Dr. Langmead, as by most other authorities, to the category of primary amentia, and of these only a quite insignificant proportion can be allotted to the two distinct subclasses in the group—the microcephalic and the Mongolian idiots. The rest, constituting therefore by far the larger part of the whole number of the defective, can only be lumped together in the undifferentiated class of the genetous or simple aments, of varying degrees of mental debility. Such a result would seem to indicate that our attempts at classification, if they are to achieve any practical end, must, at all events for the present, proceed on less ambitious lines. Possibly, as Dr. James Kerr remarked in a very suggestive contribution to the debate on Dr. Langmead's paper, we are in the habit of regarding the matter too much from the strictly pathological standpoint, and we assume too readily that what we recognise to be mental deficiency differs in kind and

not merely in degree from what we regard as mental sufficiency. Such an assumption is, in fact, very frequently made in explicit terms, but without any serious scientific evidence in its support. We might be nearer the truth if, with Dr. Kerr, we considered these very numerous cases which fail to find any place in a pathological classification as instances of mental defect through physiological variation. This view would stimulate the study of the defective from the psychological side, and would in this way lead to a system of classification based on data more accessible to our existing means of investigation, and, therefore, likely to be of practical utility.

INTERNATIONAL DENTAL CONGRESS, 1914.

THE Sixth International Dental Congress will be held in London from August 3rd to 8th, 1914, at the invitation of the British Dental Association. The King has consented to be patron of the Congress, which will take place at the University of London and at the Imperial College of Science and Technology, South Kensington. The President will be Mr. J. Howard Mummery, and the joint general secretaries are Mr. Norman G. Bennett and Mr. H. R. F. Brooks. Mr. H. Baldwin is honorary treasurer. A committee of organisation, under the presidency of Mr. W. B. Paterson (president of the International Dental Federation), with Mr. F. J. Pearce as honorary secretary, has been engaged for some time in making the preliminary arrangements. Previous Congresses were held in Paris, 1889; Chicago, 1893; Paris, 1900; St. Louis, 1904; and Berlin in 1909. The offices of the Congress are 19, Hanover-square, London, W., to which address all communications should be sent.

X RAYS IN THE DIAGNOSIS OF PULMONARY TUBERCULOSIS.

THE discussion at the Royal Society of Medicine[1] on the use of X rays in the diagnosis of pulmonary tuberculosis led to the expression of many opinions of considerable interest, if it did not go very far towards settling the actual value of this procedure. We have to realise that this method of examination is as yet in a somewhat experimental stage, and experts do not so far agree as to the exact meaning of many appearances seen in diseased lungs or even as to the conditions which may be regarded as normal. Nevertheless, the outlook as to assistance from X ray investigation is distinctly bright, especially now that improvements in technique are making it possible to get photographs of much greater clearness and definition than was the case a short time back. Much is to be hoped from the almost instantaneous process which is now being developed. At the present time three chief features are relied upon as pointing to pulmonary disease—defect in the movements of the diaphragm, failure in one or other apex to exhibit increased translucency in inspiration, and the appearance of abnormal shadows and transparent areas in the substance of the lung. The first of these may be due to a variety of different conditions, and gives only indirect evidence of disease of the lung itself, while it might be expected that increase of translucency in the apices would differ markedly in degree in persons of various types of chest development. As to the third group of signs, it is noteworthy that lungs which are apparently healthy exhibit curious streaked or mottled shadows towards their roots. The streaks have been variously attributed to the bronchi and to the vessels entering the lungs. From an *a priori* point of view the latter seems more probable, as the existence of air in the bronchi might be expected to compensate for the denser character of the tissue in their walls and thus to diminish the shadow they would throw; but further experience must be awaited to decide the question. It is at least doubtful whether such streaks often indicate any pathological process in the lung. The shadows thrown by the bronchial glands are a subject on which much discussion centred. It is clear that a calcified gland will tend to throw a definite shadow, and doubtless enlarged and inflamed glands may also make themselves conspicuous on the plate or screen. Unfortunately, enlarged glands are common, and in course of time even in healthy persons the bronchial lymphatics may lay up a considerable quantity of dust and débris. No inference can be fairly drawn as to the tuberculous nature of such bodies merely on their X ray showing. On the whole, we must conclude that the X rays are of considerable use as an additional diagnostic aid in suspected cases of tuberculous disease of the lungs, but cannot yet be relied upon to supply information which will set the matter beyond doubt. On the other hand, there are a certain number of cases of fairly advanced disease in which the physical signs are obscure and no sputum can be obtained, but in which skiagraphic examination puts the true nature of the disease on a sure basis. We may expect that this certitude will gradually extend to cases of earlier and earlier trouble, and that before long quite small areas of infiltration will be revealed by this means and the great problem of early diagnosis brought considerably nearer solution. In conclusion we must lay stress on the importance of invariably associating X ray findings with clinical examination before a definite judgment is arrived at.

[1] Proceedings of the Royal Society of Medicine, vol. vi., Nos. 5 and 6, Electrotherapeutical Section, Feb. 21st and March 19th, 1913, pp. 69 and 93.

THE MARKING OF PLUMBERS' WORK.

ONE of the principal functions of the ancient craft guilds was the establishment and maintenance of a standard of proficiency in the work of the craft. The modern trade union pays little or no attention to this important factor to the commonweal, but contents itself for the most part with an assertion of the "rights" of the workman, without any regard to his duties towards the commonweal. Some of the livery companies, however, recognise their obligations towards the public as well as their duty of sustaining the rights and privileges of their members. The two things are so far from being antagonistic that they are really complementary the one of the other. In the statutes and ordinances of many craft guilds in the Middle Ages provision was made for the inspection of the work of the craftsman by officials of the guild. In all work that can influence for good or ill the public health and economic efficiency it is especially important that there should be some means of stamping both the workman and his work—the former that the public may have guidance as to who is possessed of a reasonable competence in the matter before engaging him, and the latter that he may be held responsible for the quality of his work. The licensing of medical practitioners is a conspicuous example of the former. It is gratifying to note, as an instance of the latter, that the Worshipful Company of Plumbers have decided to revive the ancient practice of craftsmen marking their work. On April 4th Mr. John Knight, a member of the Plumbers' Company, and himself a registered plumber, gave a lecture at the Royal Technical College at Glasgow, on the invitation of the local council, to explain the system, in which he pointed out its advantages both to the public and to the conscientious craftsmen. His remarks were illustrated by lantern slides and by specimens showing the method of attaching the marks of the master plumbers and the operatives to their work. The insignificant increase

of cost entailed will really be amply repaid by the guarantee of efficiency thus afforded by the Plumbers' Company.

A SHORT WAY WITH ANTIVACCINATIONISTS.

THE Legislature of the Isle of Man has lately dealt with the question of vaccination in a very firm manner, and some very plain speaking was delivered at the Governor's Council. The Lower House, the House of Keys, had sent up a Bill admitting the principle of conscientious objection. The Legislative Council, instead of passing this Bill and rendering the compulsory clauses of their Vaccination Act as nugatory as they are now in England, promptly constituted themselves into a commission on the subject, called for evidence, and threw the Bill out on its second reading without a dissentient vote in the Council. Among the witnesses Dr. W. R. Hadwen represented the antivaccinationists, and Dr. Arthur Drury, of Halifax, was the chief witness in support of vaccination. A petition against any relaxation of the vaccination laws was presented from medical men in the island signed by all the active practitioners, except two. The Island Government has issued an admirable Blue-book containing the evidence in detail, which may be commended to all who wish to ground themselves in the arguments on either side of this question.

LIGNEOUS PHLEGMON OF THE ABDOMINAL WALL.

IN the *Journal of the American Medical Association* of April 5th Dr. W. W. Grant has described a condition in the abdominal wall analogous to that to which Professor Reclus first drew attention in 1893 under the designation "ligneous phlegmon of the neck." Subsequently cases were described by others and the condition was noticed in the text-books. It occurs most frequently in the neck, but other parts of the body may be affected. In Dr. Grant's first case the patient was a man, aged 72 years, who underwent operation for right inguinal hernia. After two weeks he went home, where he developed slight infection due to a linen stitch applied at the internal ring. The hardness and swelling were out of all proportion to the extent or degree of suppuration. It extended beyond the length of the incision and measured 3 inches transversely. The skin was red and dusky. Dr. Grant reopened the whole wound and removed the stitch. The tissues were red and solid, like a piece of beef, and unusually hard. Healing took place rapidly, and the swelling and hardness disappeared in the course of three months, long after he had returned to business and his health had been restored. In the second case the patient was a man, aged 52 years, who had an attack of appendicitis in March and again in June, 1911. He recovered without operation, but after the second attack he was never quite well. On Sept. 4th he sought medical advice for painful micturition. On palpation the physician found a hard oval tumour of the size of an orange in the lower abdominal wall, the larger part being to the right of the median line and seeming to dip into the pelvis. It continued to enlarge, and on Sept. 25th he came to Dr. Grant in a stooping position. There was a large mass in the lower abdomen covering the right hypogastrium a little more fully than the left, extending to the umbilicus, and seemingly fixed to the pubis. It was not adherent to the skin, and moved freely from side to side with the abdominal wall. Its outline was well defined, and it felt as hard as a uterine fibroma. Deep-seated suppuration was suspected. On Sept. 25th Dr. Grant made an incision into the most prominent part of the mass to the right of the rectus muscle. At a depth of two inches he opened an abscess containing a drachm of pus. After the operation there was a free discharge of sero-sanguineous pus, from which the staphylococcus pyogenes albus was cultivated. As the mass continued to increase, the abdomen was opened in the middle line on Oct. 9th. The fascia, cellular tissue, and peritoneum were closely adherent and hard. There were adhesions only about the cæcum, and there was no abscess or mass about it. The disease was confined to the abdominal walls. Under vaccine treatment recovery gradually took place. Ligneous phlegmon generally occurs after middle life when resistance has been impaired by previous ill-health. It is due to a slow infective process which may occur with or without trauma. It seems to be produced by bacteria of diminished virulence, principally staphylococci. Keen states that "treatment has little or no effect," but Dr. Grant recommends free incision and vaccines.

FATAL TOBACCO POISONING.

IN the *Cleveland Medical Journal* for February Dr. E. C. Garvin has reported a case which should be a warning to a practitioner who might in an unguarded moment give his consent to the use of tobacco infusion as a remedy for intestinal worms, for which it has an old reputation among the laity. A healthy female child, aged 6½ years, who suffered from threadworms, was given by her mother an enema of one pint of water in which were suspended one and a half teaspoonfuls of tobacco. The child immediately complained of faintness and nausea and soon commenced to vomit severely. The bowels acted, and at least part of the enema was expelled. These symptoms continued for 15 minutes, and then convulsions occurred for about 20 minutes. The child then became quiet and died in collapse about 45 minutes after administration of the enema. Cases of fatal tobacco poisoning are very rare.

THE presidency of the Section of Ophthalmology in the Seventeenth International Congress of Medicine (London, 1913), which became vacant by the lamented death of Sir Henry Swanzy, has been accepted by Sir Anderson Critchett.

WE are asked to announce that the house of the Royal Society of Medicine will be closed for Whitsuntide from Saturday, May 10th, to Tuesday, May 13th, both days inclusive.

THE next session of the General Medical Council will begin on Tuesday, May 27th, when the President, Sir Donald MacAlister, K.C.B., M.D., will take the chair at 2 P.M.

DEATHS OF EMINENT FOREIGN MEDICAL MEN.—The deaths of the following eminent foreign medical men are announced:—Dr. George McClellan, professor of anatomy in the Jefferson College, Philadelphia.—Dr. H. Bennecke, *privat-docent* of medicine in the University of Jena.—Dr. A. P. Korkunoff, formerly professor of therapeutics in the University of Tomsk.—Dr. Julian Calleja y Sanchez, professor of anatomy in the University of Madrid.

CROWNHILL CONVALESCENT HOME.—The annual meeting of the subscribers to the Crownhill Convalescent Home, near Plymouth, was held on May 1st under the presidency of Sir Henry Lopes. The medical report stated that during 1912 321 patients were admitted. The financial statement showed a deficit of £88. The Crownhill Convalescent Home was started in quite a small way about 30 years ago, but owing to the liberality of Dr. C. A. Hingston and the late Mr. C. Prideaux the present substantial and handsome building has been erected.

MAN'S MENTAL EVOLUTION, PAST AND FUTURE.

BY HARRY CAMPBELL, M.D., B.S. LOND., F.R.C.P. LOND.,
PHYSICIAN TO THE WEST END HOSPITAL FOR DISEASES OF THE NERVOUS SYSTEM.

II.[1]

Mental Evolution Proceeds on the Same Lines as Morphological Evolution.

THE essential object of mind is to place the organism endowed with it in correspondence with its environment. Biologically considered, this might almost be said to be its sole object. As already stated, the evolution of the mental personality proceeds on the same lines as morphological evolution. It is, in point of fact, impossible to divorce mind from brain: the brain in operation *is* mind,[2] and the two have evolved *pari passu* by the continued selection of favourable variations. There is no justification for the conclusion that the nervous system in general, or the brain in particular, has in its evolution followed laws differing from those by which any other system, say, the digestive, has evolved. Alfred Russel Wallace's assumption of a "spiritual influx" cannot be sustained. That veteran biologist argues that the evolution of the mind cannot be explained on the same lines as the evolution of the body; that many mental characters, such as the aptitude for mathematics and music, cannot, since they are not adaptive, have been evolved by natural selection. It is now known, however, that in the course of biological evolution by-products which are neither useful (so far as is known) nor harmful often appear and obstinately persist. It is because they are harmless that they are not eliminated by selection. The thorns on certain plants afford an instance in point.

Man's mind has attained to such a high range of possibilities, both in the emotional and the intellectual sphere, that it would be strange indeed if certain mental aptitudes should not sometimes develop beyond the point needful in the struggle for existence. Both the mathematical and the musical faculties exist in some degree in all normal persons. The former depends upon intellect, purely and simply, and we may take it as granted that intellect has evolved on accepted lines—i.e., by the selection of favourable variations. Now, given an individual endowed with a high order of intellect, it is not surprising that he should display some definite intellectual bent, that he should find it easier, e.g., to reason in some departments of thought than in others. Thus, one such individual may excel in reasoning by means of mathematical formulæ; another in abstract reasoning; another in the kind of reasoning needful for success in the game of chess, or in gauging the fluctuations of markets, and so on. Excellence in all these departments depends upon one and the same thing—a well-endowed intellect.

The musical faculty, again, although it largely involves the feelings, is also in great measure intellectual. It depends upon the ability nicely to discriminate between, and to remember, fine shades of pitch occurring consecutively or in combination. It depends, in fact, upon a special development of the auditory side of mind, and has evolved in association with language.

Mental Evolution, being Adaptive, Proceeds just as far as, but no further than, is Needful for Adaptive Purposes.

If mental evolution takes place according to the laws of morphological evolution, it follows that it does not tend to proceed beyond the point needful for adaptive service. Every species of sentient animal is provided with its own specific mental equipment. This consists in part of blind instinct, and in part of conscious intelligence, the domain of the one narrowing, and that of the other extending, as the animal scale is ascended.

The nature and extent of the mental endowment depend upon the conditions (environment) against which the species has to contend. The more complex those conditions, the richer the mental endowment, but, broadly speaking, the latter is never any higher than is needful for adaptation. If the environment of a given species remains stationary the species remains stationary, morphologically and mentally. Should a member of the species under such a stationary environment display mental qualities in advance of the average it would not be naturally selected, since its extra mental endowment would nothing advantage it in the struggle for existence. Each normal member of the species has just that degree of intelligence which suffices to adapt it to its environment, and any intelligence beyond this would be superfluous. We thus see why mental evolution has remained stationary in some species of animals for untold ages. There is no evidence that the mental endowment of a frog is any higher to-day than it was hundreds of thousands of years ago, or, again, that the reindeer has for æons advanced in the mental scale.

It is important to realise the principle that fixity of environment implies morphological and mental fixity. All biological evolution has taken place in response to a continually changing environment which, by introducing new and more complex conditions, has required corresponding adaptive readjustments.

Another correlated truth, also much overlooked, is the fact that, on the whole, the various species of the world are as perfectly adapted to their respective environments as it is possible for them to be. The mental endowment, e.g., of every animal species is exactly such as it needs, or at least as exactly as evolution can make it. It is only when its environment undergoes rapid and decided change that a species exhibits marked defects as regards adaptation.

There is no justification for supposing, as have some, that considerable difference obtains among different species in regard to the degree of their adaptation to their respective environments, nor any reason for singling out for admiration certain species as having attained to perfect adaptation and to refer to such as "end-points" or as "having arrived." Thus Drummond writes: "The lamp-shells have arrived; they are part of the permanent furniture of the world; along that particular line there will possibly never be anything higher. The star-fishes also have arrived, and the sea-urchins, and the nautilus, and the bony fishes, the tapir, and possibly the horse—all these are highly divergent forms which have run out the length of their tether and can go no further."[3] But these instances are no exceptions. Drummond's remark applies equally to all species inhabiting a fairly stable environment. Adaptation, in fact, can only be considered in relation to environment, and all species subjected to moderately fixed conditions have practically reached their limit as regards their adaptation to those conditions. Thus, such a creature as the tiger is as perfectly adapted to its own particular conditions of life as it is possible for it to be. As a slayer of other animals, a "butchering machine," as Huxley was wont to term it, it is as efficient as evolution can make it. Natural selection operating upon suitable variations has conferred upon it the necessary protective colouring, the necessary instinct for scenting and stalking its prey, and the necessary equipment in the matter of muscle, tooth, and claw for seizing and destroying it. And the like is true of all wild animals.

The Intra-speciem and the Extra-speciem Environment.

The environment of any one member of a species is constituted partly by the inanimate and partly by the animate (vegetable and animal) world, and a fixed environment implies that the influences emanating from these sources are (subject to the differences dependent upon sex), on the average, the same from generation to generation for each unit of the species. Here it is needful to emphasise the fact *that those members of a species which enter into relations with any given member of it constitute an important part of the environment of that member.* All that pertains to, or springs from, this inter-action we may speak of as constituting the *intra-speciem* environment, in contra-distinction to all that operates upon the species from without, which we may speak of constituting the *extra-speciem* environment.

The higher the species, the richer the mental endowment, the larger and more comprehensive is its influence on the *intra-speciem* environment. The conditions against which the evolving man has had to struggle have come to be more and more conditions which he has himself created. In his case the intra-speciem struggle has at every forward step become more exacting—has demanded a higher mental

[1] Article I. was published in THE LANCET of May 3rd, 1913, p. 1260.
[2] I have recently gone into this subject in my paper on the Integration and Disintegration of the Personality, Medical Press and Circular, April 30th and May 7th, 1913.
[3] Ascent of Man, p. 143.

endowment. Indeed, it has essentially been the *intra-speciem conditions created by the evolving human himself which have determined his mental evolution.* Had it been possible for the early homo-simian to have lived apart from his fellows, instead of having incessantly to contend against the conditions created by them, mental evolution would not have advanced beyond the early homo-simian level.

Among the intra-speciem conditions that have thus influenced the evolving man are those determined by hunting, polygamy, inter-tribal warfare, and tribal law. Man, lacking the equipment, instinctive and anatomical, of the carnivora for slaying animals, was largely dependent for success in the hunt upon his intelligence. This led to a rivalry in intelligence, the most intelligent surviving. The custom of polygamy renders it more difficult for some members of the tribe to get offspring than for others, the most brainy on the whole getting the largest number. Again, among primitive communities man is the fiercest enemy of man: each tribe has to reckon with its neighbours, the inferior, least brainy, tribes going to the wall. Finally, all the members of a tribe have to adapt themselves to tribal customs; failure in this respect may lead to premature death, and thus to the elimination of those not amenable to tribal discipline.

These four, I shall argue, have been the chief factors in advancing man's mental evolution.

Gregariousness.—When the members of a species group themselves into social communities the units forming each community are brought into specially close relations with one another, and the intra-speciem environment becomes correspondingly complex. Each member has to conform to the social conditions prevailing, and in the case of the gregarious animals below man instincts develop for the purpose of ensuring conformity to these. As might be expected, gregariousness often introduces conditions which make intelligence serviceable, and in this way it favours mental evolution; but while gregariousness often goes along with high intelligence, as in the case of rooks and parrots, the two are by no means necessarily associated. Oxen, for example, are not highly intelligent. The main purpose served by the communal life in their case appears to be safety, and this is secured by a simple instinct which leads the herd to present a united front to the enemy. The individual members of the herd do not enter into intimate relations with one another; they are, as Romanes remarks, social but not sociable.

The influence on mental development of communal and non-communal life is well displayed in the case of the dog and the cat respectively. These animals stand out in sharp contrast both as regards intelligence and disposition. The former, the descendant of the wolf which hunts in packs, is highly intelligent and sociable, its sociability being especially displayed in its love of man. The latter, a member of the great cat tribe which stalks its prey singly, is both less intelligent and less sociable; in independence of character it is the very antithesis of the dog. Monkeys, though they cannot be said to be gregarious in the sense of constituting compact communities, are yet sociable animals among themselves, and their high intelligence is closely related to this circumstance. As regards the anthropoid apes, the small species—the gibbons—herd together in large communities, but this is not the case with the large apes. Not only is their total number small, but it would be detrimental to their safety for them to congregate too closely. Only by the greatest caution have they been able to escape extermination at the hands of their most dreaded enemy—man, and their safety is best secured by segregation. For this reason they go about singly or in isolated families. It is unlikely, however, that creatures so intelligent do not freely consort together, and, indeed, observation of tame apes shows them to be highly sociable, although apt to grow morose under captivity.

At what stage in his evolutionary career the evolving human first began to unite into groups is a question of great interest, but as yet unanswerable. It is commonly believed that down to comparatively recent times he went about in families, that these in course of time united into hordes, and these again joined to form the tribe. To me it seems that communal life must have been started quite early in man's evolution from the anthropoid, for, without intimate association of the individual members inhabiting a district, it is difficult to see how mental evolution could have proceeded. Close association was necessary if only to allow one individual to learn from another by imitation.

One of the most interesting problems in connexion with man's evolution is why the particular ape from which he has evolved was singled out for the dignity of being his ancestor, seeing that any one of the large apes was equally competent for the position. I shall return to this question again. It is conceivable that one of the qualities which gave the pre-human ape an advantage over other species of apes was his greater sociability, and that, even before he and his kin abandoned an arboreal for a terrestrial life, an intimate communal life existed among them, so that from the very first moment of their terrestrial life the homo-simians went about in hordes rather than in families.

Of one thing we may be assured: whatever may have been the case at that period of the homo-simian epoch when hunting was limited to the search for vermin, there must, at the time when game, especially the larger game, came to be followed, have been an intimate association between the hunters. The destruction of vermin does not involve a high order of intelligence; the stalking and trapping of game does. Not only does it imply a close acquaintance with the ways of animals, but considerable skill in the making of weapons and the construction of traps. Lacking the natural weapons and instinct of the carnivora, the hunter had to manufacture weapons of his own and to rely upon carefully thought-out stratagem. Now the ability for this must have depended largely upon transmitted knowledge, but such knowledge could not be shared by a large community unless its members had been in close association one with another.

So far as genuine tribal life (i.e., the grouping of men into communities held together by definite tribal customs or laws) is concerned, it must unquestionably have existed, and in a highly organised form, from very remote times. On this point the Australian aborigines shed a clear light. Not only are they phylogenetically the most primitive people extant, but inhabiting, as they have, a vast country undisturbed for an immense period, their conditions have been very similar to those under which the evolving man lived during the greater part of his evolutionary career, and there can be no doubt, from the extreme complexity of their tribal organisation, that tribal life must have existed among them from immemorial time.

I am aware that primitive peoples are met with (e.g., in Central Africa) devoid of any definite tribal organisation. I submit, however, that it is not correct to regard these communities as genuinely pre-tribal, and that they should be looked upon rather as abnormal off-shoots from normal tribal communities.

The Conditions under which Mental Advance takes Place.

We have seen that, given a species inhabiting a stable environment, it ceases to evolve further, either anatomically or mentally, once adaptation has been attained. Could a species thus perfectly adapted voice its feelings, its pronouncement would be one of complete satisfaction with its lot. The question of ascent to a higher evolutionary plane would have no meaning for it. What more could any creature desire than the attainment of complete harmony with its environment?

Let us consider the influence of environment on the mental side of evolution. If the environment of a species remains stationary, the species, once it has become mentally adapted to it, will remain mentally stationary: it will suffer no change either in regard to instinct, feeling, or intelligence. If, however, the environment changes in such wise as to render necessary a change in mental endowment, either the necessary mental readjustment will occur or the species will die out. If neither a higher nor a lower mental endowment is required the readjustment will take place on the same mental level. If under the changing conditions an inferior mental endowment suffices, this readjustment will involve mental retrogression; but if they are such as to demand a richer mental endowment, say, a higher grade of intelligence, the readjustment will issue in mental ascent, always provided the species possesses the means of giving effect to this higher grade of intelligence. The importance of this qualification will be seen presently. Further, so long as the conditions go on changing in a manner demanding a progressively higher intelligence (and this has been the case

with the evolving human from anthropoid until recent times), so long will mental evolution (with the qualification mentioned) continue. If it ceases in a species it is because the conditions just laid down do not obtain. We shall see that in the case of man mind has ceased to advance on the intellectual side because the conditions which brought about his intellectual ascent have ceased to exist; and that, on the other hand, it is continuing to evolve on the moral side because the conditions are such as to favour evolution in this direction. The mental adjustments referred to are brought about by the natural selection of adaptive mental variations.

The Ability to put Intelligence to Practical Account is a Condition Needful for its Evolution.

I have said that a species will continue to evolve in intelligence if, and so long as, added intelligence enhances the chance of survival. Now, in order that added intelligence may have this effect, the individual exhibiting it must possess the means of turning it to practical account, for otherwise it will be of no service. Well-developed prehensile power provided the necessary means in the case of human development. The absence of it is a complete bar to mental evolution beyond a comparatively low level. It is lack of adequate prehensile power which has limited the mental evolution in birds and in mammals below the primates.

It is the hand which has rendered possible man's phenomenal mental evolution, by enabling him to turn to practical account any added intelligence that natural variations have provided. In the struggle for existence an oyster would be no better off with the mind of a Shakespeare or a Newton than with its own humble instinctive endowment; neither would a horse, or a tiger, or any other dumb animal. The development of the anterior limbs has thus had a remarkable influence on mental evolution.

The Evolution of the Hand.

We must assume that when the pre-monkey first took to arboreal life the hand already possessed some power of grasping objects, for, devoid of claws (such as those possessed by the squirrel and the cat), how otherwise could the creature have learnt to climb? It may safely be surmised that this initial prehensile power was evolved in connexion with the seizing of food. Delicate prehensile power confers upon its possessor an enormous advantage by enabling it to pick and choose highly nutritious morsels of food in the shape of nuts, berries, grubs, and the like. Compare in this respect the frugivorous monkeys and the herbivora. The former are able to provide themselves with highly concentrated food which can not only be quickly gathered and consumed, thus rendering a large part of the waking life available for other forms of activity than the search for food, but which has the further advantage of making comparatively small demands upon the digestive system. The herbivora, on the other hand, devoid of all prehensile power, must needs be content with a bulky and comparatively innutritious food, the gathering and consumption of which occupy the greater part of their waking life, and the digestion of which makes correspondingly large demands upon the energies of the organism.

It was essential that the being fated to evolve into man should possess considerable prehensile power, and should, moreover, subsist on a concentrated diet. So much might have been postulated *a priori*. It may also be surmised that it would be insectivorous and frugivorous (certainly not wholly carnivorous, since the carnivora lack prehensile power). We may, then, conceive of the pre-monkey as a small, agile, terrestrial mammal, with limbs conforming to the pentadactyl type, possessing, by virtue of freely moving hand-digits, considerable prehensibility, and subsisting on insects, grubs, and the like, and concentrated vegetable food. Quite early in the mammalian era (somewhere in the eocene) we must suppose that this creature, probably of the nature of a lemur, adopted an arboreal life, which conferred upon it the double advantage of a plentiful supply of concentrated vegetable food and protection against the large carnivora.[4] It seems probable that the first step towards climbing was not made to elude foes but for the purpose of securing food. In the search for food branches would be grasped and from this to actual climbing is but a step.

There can be little doubt that the evolution of the hand was greatly helped by arboreal life. The competence of arboreal life to evolve a hand endowed with a high degree of prehensile power is shown by the fact that in many of the monkeys the feet have evolved remarkable powers of prehension, essentially for the purpose of climbing, and this has certainly been the result of arboreal life. Under this influence the hand underwent steady evolution, and by the time the late anthropoid stage was reached had become little inferior in prehensibility to the human hand. The great advance in manipulative skill which took place during the post-anthropoid stage of man's evolution essentially pertained, not to the hand itself, but to the nervous system controlling it. With increasing intelligence the hand came more and more under mental control, and finally was able to execute movements of infinite delicacy. These final stages in mammalian prehensibility were reached during the post-arboreal (terrestrial) phases of man's evolution. The search after animal food, which—to anticipate—was probably the main reason why the pre-human anthropoid abandoned an arboreal life, led to the manufacture of weapons and implements, and in this way hand-control steadily advanced. Those who were the cleverest in this respect stood the best chance of survival. The delicate manipulative powers of the human hand are thus, I submit, traceable to the search after animal food; and when we consider how great those powers are, the fact, if fact it be, is remarkable. The Australian, whose ancestors have never employed their hands for purposes requiring greater skill than the manufacture of flint implements, clubs, spears, boomerangs, shields, primitive nets, fish-hooks, and the like, is capable of acquiring as much manipulative skill as the European. He can be taught to perform such complex coördinated movements as those involved in writing, drawing, and the playing of musical instruments. There is, indeed, hardly any limit to the educability of the hand. This is not surprising if we remember that it is chiefly the hand which carries out the dictates of the mind. All cerebral roads lead to the hand. The cortical centres immediately controlling it lie anteriorly, but paths course to these centres, directly or indirectly, from all parts of the cerebral cortex. The dominant part played by the hand-centres in the "motor" cortex is strikingly shown in Jacksonian epilepsy. More than in any other group of muscles the fit is apt to begin in the muscles of the hand—generally in those of the thumb, that digit, i.e., which above all has determined man's mental evolution. Who, witnessing such a fit understandingly, can remain wholly unstirred by this weirdly eloquent message from the long dead past?

(To be continued.)

[4] The protection afforded by arboreal life rendered the acquisition of great muscular strength unnecessary for defensive purposes, and it was of obvious advantage to keep the body within moderate dimensions, since a small animal needs less food than a large. So far as the primitive anthropoid is concerned, it is known to have been a small animal. What is the meaning of the increase of size of its larger derivative? I suggest that it may have been related to the increasing size of the brain. This necessitates a corresponding increase in the size of the head, and thus of the body and limbs which support it.

METROPOLITAN ASYLUMS BOARD.

Appointment of Research Pathologist.

THE hospitals committee reported to the Metropolitan Asylums Board on May 3rd that with a view to the appointment of a competent person to the position of research pathologist[1] communications had been sent to the principals of the pathological departments of a number of universities in England and Scotland suggested by the Board's bacteriological adviser, Professor G. Sims Woodhead, and also of universities in America, Austria, Belgium, Germany, Italy, and France, with the result that 18 nominations were received, and in response to invitation 11 gentlemen applied for the position. Seven of the candidates were seen by the medical subcommittee, Professor Sims Woodhead being consulted on each occasion. The committee recommended the appointment of Dr. William Mair, M.A., B.Sc., for seven years lecturer in pathology at the Manchester University, and pathologist to the Manchester Children's Hospital and the Salford Royal Hospital. The recommendation was agreed to.

[1] THE LANCET, April 26th, 1913, p. 1208.

Work of Medical Superintendents Recognised.

The asylums committee reported that in view of the greatly altered conditions at the Darenth industrial colony it had had under consideration the salary of the medical superintendent, Dr. A. Rotherham, who had been in receipt since 1908 of his maximum remuneration of £800 with emoluments. The changes in administration had involved the removal from Darenth of the unimprovable imbeciles, who merely required housing, and the aggregation there, in two separate sections, first of the highest grade of improvable imbeciles, and, secondly, of the non-certified feeble-minded. The committee quoted favourable reports upon the institution by the Lunacy Commissioners, and said that the work which had elicited so many commendations had been carried out under Dr. Rotherham's personal direction and supervision. The Board approved of a proposal which would have the effect of increasing the salary of the medical superintendent by about £40 per annum. The Board also approved the increase of the salary of Dr. W. T. Gordon Pugh, medical superintendent of Queen Mary's Hospital for Children, from £600 with emoluments, to the maximum of £700 in one increment. The committee in this case noted that the development and organisation of the work of the hospital, the introduction of many up-to-date forms of treatment, and the widespread reputation the hospital had gained in the eyes of visiting deputations from all parts were attributable to the great initiative and resource of the medical superintendent. Side by side with this, due regard had been paid to economical management, and the finance committee had noted the comparatively low cost.

THE FINAL REPORT OF THE ROYAL COMMISSION ON UNIVERSITY EDUCATION IN LONDON.

III.[1]

ONE of the most difficult problems before the Commissioners was to arrive at recommendations in respect of the Medical Faculty which should alike do justice to the good work and great position of the past and respond to the vigorous demand for something better in the future. The Faculty requires special treatment, because the teachers stand in a different position to that occupied by professors and readers in other faculties. The Commissioners set out the points as follows:—

> What is the nature of the clinical teaching the University should provide? Is it provided at present? If not, what changes are required? The proper organisation of a university medical college will depend on the answers. The proper organisation of the intermediate sciences of anatomy, physiology, and pharmacology will also depend on the answers to these questions. The way of providing for instruction in the preliminary sciences of physics, chemistry, and biology requires a consideration of the whole medical curriculum and its relation to secondary schools. It must finally be considered whether, and, if so, how, the University is to obtain the educational and financial control of one or more of the medical schools which is required in the case of institutions to be admitted as constituent colleges.

The report next deals with the present organisation of medical education in London and the relation of the University of London thereto. It states that the changes effected by the recent reconstitution were the creation of the Faculty of Medicine, appointment of boards of studies, and admission into the Faculty of the Medical Schools. A distinction between external and internal students was then introduced, and a committee of medical members of the Senate was formed. The changes, in the opinion of the Commissioners, did not accomplish much, as the Faculty was too large for effective action. The Committee of the Senate and the Boards of Studies improved the curriculum and examinations, but the medical schools were almost as detached from, and as independent of, the University and of each other as before.

Professor Starling's account of the history of the London medical schools is quoted in the report as showing that the main difficulties of creating a University Medical School in London arose from the historical evolution of medical teaching in the metropolis. The following is Professor Starling's report:—

> The medical schools are for the most part considerably older than the University, and preceded any attempt to teach the medical sciences in the universities of England. Nearly all the medical schools had their origin as informal arrangements between the physicians and surgeons employed in the service of the hospitals, the hospitals themselves being charities either dependent on private endowments or subsisting by continual appeal for subscriptions. The schools sprang from the apprenticeship and pupilage system. Men who had served their apprenticeship under an apothecary in the country came up to London to "walk the hospitals" and to learn from the members of the hospital staffs. At the same time they would study anatomy at one of various anatomy schools existing in London. The governors of the hospitals allowed the members of the staff to take pupils, and later assisted them by building dissecting-rooms in which the pupils could study anatomy under the supervision of the surgeons of the hospitals. In this way schools sprang up in connexion with the hospitals, but without any formal or corporate existence. Each school was a private concern in which by arrangement the total fees were pooled. After the expenses of the school had been discharged, the rest was divided into shares which were distributed among the members of the staff. In the early days of the medical schools the buildings, and probably much of their upkeep, were provided at the expense of the hospital charity. It is only quite recently that there has been a careful allocation of the expenses between the hospital schools and the hospital charities respectively.
>
> At first all the teaching in these schools was carried out by the medical and surgical staff, and even when scientific subjects, such as chemistry, physics, and biology, were introduced as necessary parts of the curriculum, it was the duty of junior members of the practising staff, or of young men who were waiting in expectation of being appointed to the hospital staff, to undertake the teaching in these subjects. With the growth and development of the various subjects of the medical curriculum it has become more and more difficult for the junior medical staff to teach the medical sciences. The earliest subject to break away was chemistry. Already 40 years ago many of the medical schools found that they had to employ chemists to train their students in this subject. Later on physics necessitated expert teaching and biology soon followed suit. During the last 20 years the same change has occurred in the teaching of physiology and anatomy, so that most of the medical schools have now a complete staff of men who devote all their time to the pursuit of the preliminary and early subjects of the curriculum.
>
> This change has naturally entailed a considerable burden on the pecuniary resources of the various schools. In their early days the expenses of the association of physicians and surgeons forming the staff were very slight. There were few or no expensive laboratories to be kept up, and the lecture and dissecting rooms were maintained at the cost of the hospital. Practically all the fees were, therefore, available for division among members of the staff. When the work was undertaken by junior men waiting for a position on the staff they would be content with inadequate salaries, or even with none, since their work was in the nature of a service to the school to be rewarded in the future with a position on the staff. As soon as professional teachers were appointed it was necessary to provide them with a salary irrespective of prospects. At first they were paid by the allocation to them in most schools of a certain number of shares, but with the increasing burdens on the schools and the corresponding depression in value of the shares, it has been necessary to replace this method by one of fixed payment or to guarantee the shares at a certain minimum sum. Science teachers are thus not members of the association which forms the medical school. They may in some cases be members of the school committee, but they are not members of the staff. They have no voice in appointments to the staff, and generally little or no voice even in the appointment of members of the scientific staff. They are in fact salaried servants of the staff. This arrangement is not unnatural, since on the staff, especially under the modern arrangement of complete separation between hospital and school accounts, falls the whole burden of the maintenance of the medical school. In many schools the clinical teachers receive little or nothing for their lectures and clinical teaching, and in some cases the value of the share has been actually a minus quantity and the deficit has had to be met by a levy or by subscriptions among the members of the staff. In most cases, therefore, the maintenance of a medical school might be said to involve considerable sacrifice on the part of the clinical staff. In making these sacrifices the members of the staff are actuated partly by loyalty to their school, partly by self-interest. The clinical teaching of London is based on hospital service. The greater part of the work of the hospitals is carried out by students, who, while serving the hospital, acquire in a series of posts of gradually increasing responsibility the actual acquaintance with the diagnosis and treatment of disease necessary to fit them to be practitioners of medicine. There is no doubt that this method of teaching is in the best interest of the patients as well as of the students, as is shown by the acknowledged efficiency of all the hospitals to which medical schools are attached. It is thus absolutely necessary under present arrangements to attract to the school a sufficient number of students for the service of the hospital. Mr. Holland, for instance, regards the connexion of a school with the London Hospital as so essential to the purposes of the charity that he is able to raise among the supporters of the hospital £3000 a year "ear-marked" for the purposes of the medical school. On the other hand, it must be remembered that the students in a hospital after qualification become general practitioners, and that it is from these practitioners that the members of the hospital staff gain the basis of their consulting practice. A medical man will naturally send his patient either for consultation or for operation to one of his former teachers. A position on the staff of a medical school is thus regarded as a sure method of obtaining a consulting medical or surgical practice, and the larger the number of students the larger will be the *clientèle* on which the staff can rely for a practice. Thus in the maintenance of the medical school loyalty to the school and self-interest become united.
>
> This state of affairs cannot be regarded as in the interest of university teaching in London or of medicine itself. The medical schools, however efficient, are essentially of the nature of "trade schools." As the boy leaves a secondary school to enter a medical school the standard which is at once set before him is professional success. The teachers of science with whom he first comes in immediate contact, in many cases

[1] Nos. I. and II. were published in THE LANCET of April 26th (p. 1184) and May 3rd (p. 1251), 1913, respectively.

act of marked ability, are in all cases in a position of inferiority to the clinical staff, whose servants they are. The work which is expected of these scientific teachers is to get the students under them as quickly as possible through the various preliminary and intermediate examinations, so that they may be passed on to the clinical work of the wards. The scientific teacher is, in fact, only useful in so far as he passes his students. The whole idea of the first three years, the most impressionable time of the student's career, is not educational but professional.

Professor Starling in his evidence then proceeded to consider the main drawbacks to the existing system, and the Commissioners thereon report as to the relations between the University and the medical schools of the metropolis. They say:—

The main defects in the existing system are: absence of university ideal; subordination of teaching to examination; waste of energy in hospital schools. To some extent the University may be to blame, but it has not had the means of assuming financial responsibility for medical education. It has confined itself to prescribing a curriculum and conducting examinations on a syllabus. The medical schools have had the responsibility for medical education, and may claim that their interests should be considered in any reorganisation of medical education in London. On the other hand, they are almost as closely connected with Oxford and Cambridge and the Conjoint Board as with London University. They prepare indifferently for the examinations of all qualifying authorities for which their students desire to enter. Their teaching is subordinated to external examinations.

The Commissioners proceed to the detailed consideration of the medical curriculum under its three headings, Preliminary, Intermediate, and Advanced (i.e., purely medical) Studies.

With regard to the Preliminary Studies they find that the Statutory Commission of 1898, following the Gresham Commission Report, recommended concentration of all three divisions of study, but the attempts of the Senate to bring this about have failed, the collapse being attributed partly to the alteration in size and constitution of the Medical Faculty by the admission of the science teachers in the medical schools, and partly to the jealousy of University and King's Colleges. The Commission reports:—

The reasons for concentration no longer hold good to the same extent as formerly. The chief difficulty in arranging for adequate instruction in the preliminary sciences is the want of time. The Board of Preliminary Sciences recommend teaching with special reference to future application. The existing arrangements for science teaching are not satisfactory. The preliminary sciences should be special subjects of the last two years of a secondary school course and be included in the higher school examination which would exempt from the preliminary science examination, give admission to the Faculty of Medicine, and shorten the University course to four and a half years.

They add that there is

Evidence of the Association of Public Schools Science Masters that science teaching in some schools is of a high standard. The Conjoint Board and General Medical Council now recognise schools for preliminary science. The University will have to provide instruction for students who have not taken science at school.

They further dwell upon the importance of the scientific grounding of the medical student, the particular difficulty offered here being, of course, the study of biology.

With regard to the organisation of instruction in the Intermediate Sciences the Commissioners find that if clinical instruction is organised on a university basis the case for the concentration of study in these subjects loses its force. The proper course, they consider, is to provide for the teaching and study of anatomy, physiology, and pharmacology in a university medical college (the institution of which they deal with in discussing the advanced medical studies), so that the intermediate and advanced instruction may proceed hand in hand.

(To be continued.)

THE SEVENTEENTH INTERNATIONAL CONGRESS OF MEDICINE (1913).

SECTION OF OBSTETRICS AND GYNÆCOLOGY.

THE President of this section is Sir Francis H. Champneys, Bart., and the honorary secretary, Dr. Herbert R. Spencer (104, Harley-street, W.).

The meetings of this section will be held in the Chemistry Theatre of the Imperial College of Science.

On Thursday, August 7th, a discussion will be opened by Professor Döderlein (Munich) and Professor Essen-Möller (Lund) on the Treatment of Hæmorrhage from the Placental Site (Placenta Prævia and Accidental Hæmorrhage) in the Later Months of Pregnancy.

On Friday, August 8th, a discussion (jointly with Sections X. and XVIII.) on Infant Mortality in the First Four Weeks of Life, will be opened by Dr. A. K. Chalmers (Glasgow), Dr. Henry Koplik (New York), and Professor Wallich (Paris).

On Monday, August 11th, a discussion (jointly with Section XXII.) on Röntgen and Radium Therapy in Gynæcology, will be introduced by Dr. Foveau de Courmelles (Paris), Professor B. Krönig (Freiburg), and Professor A. Schönberg (Hamburg).

On Tuesday, August 12th, a discussion on Cancer of the Uterus (Body and Cervix), Operative Technique and Results, will be introduced by Professor D. de Ott (St. Petersburg), Professor A. Pollosson (Lyons), and Professor Wertheim (Vienna).

The afternoon sessions will be occupied with the reading and discussion of independent papers which will be selected by the council of the section.

The titles of papers have already been received from the following authors: Professor Franz Daels (Ghent), Professor Fritz Frank (Cöln), Professor Fabre (Lyons), Dr. Geneviève Clark (Cambridge, Mass.), Dr. Riddle Goffe (New York), Professor Hugo Sellheim (Tübingen), Dr. J. M. Munro Kerr (Glasgow), Dr. Kudoh (Korea), Professor Recasens (Madrid), Professor E. P. Davis (Philadelphia), Dr. A. Louise McIlroy (Glasgow), Dr. A. F. A. King (Washington), Professor Kraemer (Greifswald), Dr. Heinrich Rotter (Budapest), Dr. J. Bonjour (Lausanne), Dr. Odön Tuszkai (Budapest), M. Louis Wickham and M. Paul Degrais (Grasse), Dr. Robert L. Dickinson and Dr. John O. Polak (Brooklyn), Professor Pozzi (Paris), Professor P. Nubiola (Barcelona), Dr. Hans Hermann Schnid (Prague), and Dr. F. J. McCann (London). Demonstrations have also been offered by Professor Hugo Sellheim (Tübingen) and Professor W. Nagel (Berlin). The latest date for the reception of titles and papers is July 1st.

The department of the museum dealing with obstetrics and gynæcology will contain specimens illustrating the papers and discussions and also other material, either dealing with the subjects of Cancer of the Uterus and Hæmorrhage from the Placental Site or illustrating other investigations and observations of current interest.

An exhibition of old obstetrical instruments will be a special feature of this department of the museum. It will contain the whole of the collection now preserved at the Royal College of Surgeons of England, which is being catalogued by Mr. Alban H. G. Doran, and, it is hoped, many other rare old instruments from British and foreign sources. Communications regarding the museum should be addressed to the honorary secretary of the Museum Committee, Mr. H. W. Armit, Ravenhurst, Talbot-road, Wembley.

On Saturday, August 9th, a dinner will be given by British members of the section, at which foreign guests will be entertained.

ROYAL MEDICAL BENEVOLENT FUND.

THE FESTIVAL DINNER.

IN spite of the regretted absence—through the illness of the Duchess of Connaught—of Prince Arthur of Connaught, who was to have presided, the festival dinner in aid of the Royal Medical Benevolent Fund on April 30th was a great success. The company at the Hotel Cecil numbered about 250, of whom many were ladies. Sir John Tweedy, the president of the Fund, occupied the chair, and he was immediately supported by the Dowager Lady Broadbent, Sir Thomas Barlow, Lord Goschen, Sir Rickman Godlee, the Hon. Evelyn Hubbard, Sir Henry Burdett, the Hon. W. F. D. Smith, Mr. W. Bramley Taylor, Sir Frederick Treves, Sir James Reid, Captain and Mrs. Eric Barham, and Dr. Samuel West (treasurer).

Sir JOHN TWEEDY, in proposing the toast "Prosperity to the Royal Medical Benevolent Fund," read a message from Prince Arthur of Connaught, expressing regret at his unavoidable absence from the chair that evening, and warmly recommending the Fund to the notice of the charitable public. His Royal Highness's sympathetic and appreciative message informed the company that the King, in addition to bestowing the title of Royal upon the British Medical Benevolent Fund, thereby setting the seal of his

approval upon its aims and objects, had now conferred a still greater honour upon the Fund by consenting to become its Patron. The news of this honour, which Prince Arthur had hoped to convey in person, was very warmly received. The message continued:

> I am not sure that we all realise what a debt we owe to the medical profession. Surely the fact that its members are spending their lives in alleviating suffering and are engaged fighting with disease must appeal to the imagination. Yet, do many of us, whose ordinary business hours are from 10 to 4, ever think of the overworked doctor, who is liable to be called out at any hour of the day or night to pass several hours at some bedside, while others, who have probably not spent nearly such a hard day in pursuit of their profession or business, are earning what they consider a well-deserved rest? Great prizes, in the way of fame and fortune, are no doubt attained by a few of its members, but these must always be in a minority; and when we consider the long and patient training needed for such a profession as medicine and surgery has become in these days of exact science, it is inevitable that amongst the rank and file some must go to the wall. Even those whose talent and industry give promise of a brilliant career may be struck down by illness, and it is to provide for the fatherless children of such that I had hoped to be present to plead this cause to-night. As you are all aware, the Royal Family and myself have very special reasons of gratitude to the medical profession, by whose skill and care my beloved mother the Duchess of Connaught, though passing through a very great crisis, is being slowly restored to her normal health and strength. Consequently it is a very great pleasure to me to subscribe to this fund to-night and also to send you a cheque from my father as his contribution as a thankoffering and tribute of respect and admiration for the noble profession so largely represented to-night.

Dr. SAMUEL WEST, in acknowledgment of the toast, expressed the regret of all present at the absence of His Royal Highness, and their warm appreciation of the terms in which he had spoken of the Fund and its work. Dr. West said that the new honour bestowed by His Majesty had come as a surprise to most of them. This unexpected compliment, carefully prepared by the kindly thought and consideration of Prince Arthur, would render the gathering that evening memorable in the history of the Fund. Dr. West suggested that an invitation should be conveyed to Prince Arthur to become Vice-Patron, and on the proposal of the CHAIRMAN, seconded by Mr. PARKER YOUNG (chairman of committee), it was resolved to send him a telegram of thanks and sympathy.

Mr. GEORGE BETHELL then announced subscriptions and donations amounting to more than £2848, including £25 each from the Duke of Connaught and Prince Arthur of Connaught.

Public Health.

ANNUAL REPORTS OF MEDICAL OFFICERS OF HEALTH.

Borough of Southend-on-Sea.—Dr. C. G. Pugh's report on this district for 1912 contains an exceptional amount of interesting material. It relates to a town which is rapidly growing, having now some 67,000 inhabitants, and from being merely a place of resort by trippers has become a residential borough which is the home of large numbers of people engaged in occupations in London and men who have retired from business. Day trippers still come in the summer, however, and on some days the total of temporary visitors has been estimated at 70,000. Only 263 houses were vacant in the middle of the year, though more than 700 had been erected during the previous 12 months. Dr. Pugh emphasises the responsibility imposed on the council by this rapid growth, and urges that every endeavour should be made to avoid a repetition on new building sites of the errors in town planning which are so painfully obvious in the greater part of the area of the borough which has been built over in recent years. The custom of builders of putting up long rows of houses in terraces has given rise to special inconvenience through the difficulty of obtaining access to the backs of houses for removal of refuse and the dirty condition of such back passages as are available. If the corporation properly supervises the development of building estates in future these conditions should easily be avoided. On the whole, the report gives a favourable impression of the sanitary government and progress of the town. The authorities are completing the enormous scheme of sewerage and sewage disposal which is designed to stop the pollution of the foreshore in this part of the Thames estuary; they are providing a dust destructor, a large swimming bath, and new offices of the health department, and have made a beginning with a number of necessary improvements. The better control over the collection of shellfish from the foreshore has had good results which are directly shown in the returns of typhoid fever cases, and Dr. Pugh urges that this control should be still further extended to secure a removal of the mussel banks, which are not only a source of danger but also contribute to a marked extent to the unsightly appearance which the foreshore presents. We are glad to note also the observation that "public conveniences" should be provided not as a source of revenue to the council but for the convenience of the public. It is unreasonable to expect the working-class woman who takes a family of children to Southend to spend a perceptible part of her holiday money on micturition. Another matter in which strict control is needed in a town of this kind is the condition of the smaller milk shops, many of which in Southend seem quite unsuited for the business. In discussing measures against tuberculosis the report lays stress on the zeal shown by medical men in the town in dealing with preventable causes of infection among their patients. There is no reason to believe that the advice given to these patients would have been more efficacious if it had come from the medical officer of health, and Dr. Pugh regrets that the Tuberculosis Regulations do not allow some discretion to the medical officer of health as to the cases he should visit. We cannot imagine, however, that the Local Government Board would object to the exercise of discretion in such a matter. The Essex county council has appointed a joint committee for Southend and its neighbourhood, which consists of representatives of the local district councils, to exercise its powers of providing and working dispensaries. The report lays stress on the importance of thus securing local control over the dispensary system. We read with some surprise that "no fewer than 6·3 per cent. of the deaths in the borough in 1912 were registered as being uncertified, thus placing Southend-on-Sea in the position of being, among the great towns, the area in which the greatest number of persons are buried without any medical certificate or skilled inquiry as to the cause of death." It would be interesting to know the causes to which this high figure is to be attributed.

Urban District of Weston-super-Mare.—Dr. John Wallace reports an exceptionally thorough system of dealing with diphtheria contacts in Weston-super-Mare, which has been adopted since the county council of Somerset established a bacteriological laboratory in that town. Every suspicious nose and throat has been "swabbed," while every person known to have been in contact with a case or with a bacteriologically positive contact case has been similarly swabbed. It is further stated that no case (unless it had left the town) has been allowed to join the healthy community until two successive negative swabs have been got from the nose and throat, and the patient and the premises with its contents disinfected. This procedure must certainly have entailed a large amount of work on the public health staff, and it is a testimony to the way in which it has been done that Dr. Wallace does not report any substantial opposition from the healthy people with whose business the rigid application of such a system must necessarily at times cause serious interference. The total number of swabs examined was 898, of which 176, relating to 79 different individuals, were positive as regards the Klebs-Loeffler bacillus. All this work was undertaken in connexion with a total of 44 notified cases of clinical diphtheria. It may be questioned whether the system described could be fully maintained during any considerable outbreak of the disease, but we may reasonably suppose that the greatest value can be obtained from it in inter-epidemic periods or at times of relatively low diphtheria prevalence.

Borough of Chesterfield.—The importance of giving attention to suspicious cases of lead poisoning in districts which have a soft water-supply derived from moorlands is well illustrated in Dr. F. A. Sharpe's annual report. A medical practitioner having drawn attention to a case of lead poisoning in which water was suspected, investigation was made of the plumbo-solvency of the public water-supply in its several sections. It was found that samples of water drawn off in the early morning from the low-level supply showed little or no lead, but that on the high-level supply amounts of lead such as 0·07 grain per gallon were present in houses served by old lead pipes and as much as 0·1 and 0·3 in certain houses with new pipes. Water from the Upper and Lower Linacre reservoirs,

tested for plumbo-solvency, took up during 24 hours quantities of lead between 0·07 and 0·15 grain per gallon. As Dr. Sharpe points out, the problem of rendering water safe in this respect is not difficult, and though water authorities are sometimes reluctant to incur the necessary expense of lime treatment and chemical supervision to secure its efficiency, it is to be hoped that there will be no hesitation on the part of the Chesterfield authorities in supplying such treatment to their high-level supply.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, and whose aggregate population at the middle of this year is estimated at 17,852,766 persons, 8700 births and 4866 deaths were registered during the week ended Saturday, May 3rd. The annual rate of mortality in these towns, which had been 15·2, 15·8, and 14·8 per 1000 in the three preceding weeks, further declined to 14·2 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these towns averaged 15·1, against 15·3 per 1000 in London during the same period. The death-rates last week in the several towns ranged from 4·2 in Acton, 4·3 in Devonport, 5·5 in Cambridge, 6·2 in Lincoln, and 6·3 in Bournemouth, to 21·6 in Sunderland, 22·8 in Aberdare, 23·0 in Burnley, 24·8 in Gloucester, and 27·9 in Stockton-on-Tees.

The 4866 deaths from all causes were 186 fewer than the number in the previous week, and included 388 which were referred to the principal epidemic diseases, against 412 and 338 in the two preceding weeks. Of these 388 deaths, 149 resulted from measles, 94 from whooping-cough, 75 from infantile diarrhœal diseases, 39 from diphtheria, 22 from scarlet fever, and 9 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases last week was equal to 1·1 per 1000, against 1·2 and 1·0 in the two preceding weeks. The deaths attributed to measles, which had declined from 215 to 143 in the four preceding weeks, rose slightly to 149 last week, and caused the highest annual death-rates of 1·6 in St. Helens and in Salford, 1·8 in Newport (Mon.), 2·3 in West Bromwich, and 3·9 in Walsall. The deaths referred to whooping-cough, which had been 50, 74, and 80 in the three preceding weeks, further rose to 94 last week; the highest death-rates from this disease were 1·2 in Leyton, 1·4 in Bootle, 2·0 in Dudley and in Stockton-on-Tees, 2·2 in Stoke-on-Trent, and 2·7 in Brighton. The fatal cases of diarrhœa and enteritis (among infants under 2 years of age), which had been 63, 65, and 56 in the three preceding weeks, rose to 75 last week, and included 24 in London, 4 in Birmingham, 4 in Liverpool, 4 in Manchester, 3 in Great Yarmouth, and 3 in Leeds. The deaths attributed to diphtheria, which had been 36, 41, and 37 in the three preceding weeks, were 39 last week; 11 deaths were registered in London, 3 in Manchester, and 2 each in Eastbourne, in Birmingham, in Leeds, and in Rhondda. The deaths referred to scarlet fever, which had declined from 23 to 14 in the four preceding weeks, rose to 22 last week, and included 3 in London, 3 in Birmingham, 3 in Manchester, and 2 in Portsmouth. The fatal cases of enteric fever, which had declined from 16 to 9 in the four preceding weeks, were again 9 last week, of which number 3 were recorded in London.

The number of scarlet fever patients under treatment in the Metropolitan Asylums and the London Fever Hospitals, which had been 1357, 1334, and 1339 at the end of the three preceding weeks, had further risen to 1375 on Saturday last; 216 new cases were admitted during the week, against 148, 215, and 185 in the three preceding weeks. These hospitals also contained on Saturday last 797 cases of diphtheria, 681 of measles, 284 of whooping-cough, 34 of enteric fever, and 1 of small-pox. The 1230 deaths from all causes in London were 55 fewer than the number in the previous week, and were equal to an annual death-rate of 14·2 per 1000, which coincided with the rate recorded in the 96 towns. The deaths referred to diseases of the respiratory system, which had been 285, 329, and 245 in the three preceding weeks, rose to 255 last week, and were 30 in excess of the number recorded in the corresponding week of last year.

Of the 4866 deaths from all causes in the 96 towns, 160 resulted from different forms of violence, and 353 were the subject of coroners' inquests. The causes of 40, or 0·8 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in London and in its 14 suburban districts, in Manchester, Bristol, Hull, Newcastle-on-Tyne, Portsmouth, Salford, Leicester, and in 56 other smaller towns. Of the 40 uncertified causes of death 10 were registered in Birmingham, 7 in Liverpool, 4 in Stoke-on-Trent, 4 in Preston, and 2 in Warrington.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,259,600 persons at the middle of this year, 1259 births and 746 deaths were registered during the week ended Saturday, May 3rd. The annual rate of mortality in these towns, which had been 17·2, 17·7, and 17·3 per 1000 in the three preceding weeks, declined to 17·2 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these Scotch towns averaged 17·3, against 15·1 per 1000 in the 96 large English towns during the same period. Among the several towns the annual death-rates last week ranged from 7·6 in Ayr, 11·5 in Motherwell, and 12·3 in Leith, to 18·3 in Paisley, 19·1 in Glasgow, and 20·3 in Hamilton.

The 746 deaths from all causes were 5 below the number in the previous week, and included 102 which were referred to the principal epidemic diseases, against 72 and 76 in the two preceding weeks. Of these 102 deaths, 40 resulted from whooping-cough, 32 from measles, 12 from infantile diarrhœal diseases, 8 from scarlet fever, 7 from diphtheria, and 3 from enteric fever, but not one from small-pox. These 102 deaths from the principal epidemic diseases were equal to an annual death-rate of 2·4, against 1·1 per 1000 in the 96 large English towns. The deaths attributed to whooping-cough, which had been 44, 39, and 34 in the three preceding weeks, rose to 40 last week, and included 24 in Glasgow, 5 in Edinburgh, 4 in Paisley, and 3 in Leith. The deaths referred to measles, which had been 13, 13, and 18 in the three preceding weeks, rose to 32 last week; 16 deaths were registered in Glasgow, 10 in Aberdeen, 2 in Edinburgh, and 2 in Dundee. The fatal cases of diarrhœa and enteritis (among infants under 2 years of age), which had been 11, 9, and 16 in the three preceding weeks, were 12 last week, and included 6 in Glasgow and 3 in Dundee. The deaths attributed to scarlet fever numbered 8 last week, against an average of 3 in the four earlier weeks of the quarter, and comprised 5 in Glasgow, 2 in Aberdeen, and 1 in Greenock. The deaths referred to diphtheria, which had been 9, 8, and 3 in the three preceding weeks, rose to 7 last week, of which number 5 were recorded in Glasgow. The 3 fatal cases of enteric fever were recorded in Glasgow, Clydebank, and Falkirk respectively.

The deaths referred to diseases of the respiratory system, which had been 117, 153, and 119 in the three preceding weeks, were 118 in the week under notice; 23 deaths resulted from various forms of violence, against 31 and 34 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland, with an aggregate population estimated at 1,199,180 persons at the middle of this year, 725 births and 425 deaths were registered during the week ended Saturday, May 3rd. The annual rate of mortality in these towns, which had been 22·5, 20·9, and 21·3 per 1000 in the three preceding weeks, declined to 18·5 per 1000 in the week under notice. During the first five weeks of the current quarter the mean annual death-rate in these Irish towns averaged 21·3 per 1000; in the 96 large English towns the corresponding rate did not exceed 15·1, while in the 16 Scotch towns it was equal to 17·3 per 1000. The annual death-rate last week was equal to 16·8 in Dublin (against 14·2 in London and 19·1 in Glasgow), 18·7 in Belfast, 26·5 in Cork, 16·5 in Londonderry, 14·9 in Limerick, and 17·1 in Waterford, while in the remaining 21 smaller towns the mean death-rate was equal to 19·5 per 1000.

The 425 deaths from all causes in the 27 Irish towns were 66 fewer than the number in the previous week, and included 19 which were referred to the principal epidemic diseases, against 42 and 24 in the two preceding weeks. Of these 19 deaths, 7 resulted from infantile diarrhœal diseases, 4 from measles, and 2 each from enteric fever, from scarlet fever, from whooping-cough, and from diphtheria, but not one from small-pox. These 19 deaths from the principal epidemic diseases were equal to an annual death-rate of 0·9 per 1000, against a corresponding rate of 1·1 in the 96 large English towns, and of 2·4 in the 16 Scotch towns. The deaths of infants (under 2 years of age) attributed to diarrhœa and enteritis, which had declined from 11 to 7 in the four preceding weeks, were again 7 last week, and included 3 in Dublin. The deaths referred to measles, which had been 14, 18, and 5 in the three preceding weeks, were 4 last week, and comprised 3 in Wexford and 1 in Cork. The 2 fatal cases of enteric fever were recorded in Dublin and Belfast respectively; those of scarlet fever in Belfast; those of diphtheria in Dublin; and those of whooping-cough in Dublin and Kilkenny respectively. With the exception of enteric fever, the deaths last week from each of the epidemic diseases were below the respective averages in the four earlier weeks of the quarter.

The deaths referred to diseases of the respiratory system, which had been 109, 92, and 97 in the three preceding weeks, were again 97 in the week under notice. Of the 425 deaths from all causes, 133, or 31 per cent., occurred in public institutions, and 9 resulted from different forms of violence. The causes of 14, or 3·3 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 96 large English towns the proportion of uncertified causes of death last week did not exceed 0·8 per cent.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

THE following appointments have been notified:—Fleet-Surgeons: E. C. Ward to the *Aboukir*, and for group of ships of Third Fleet; and F. W. Parker to the *Prince of Wales*. Staff-Surgeon: D. D. Turner to the *Vivid*, for R.N. Barracks.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel James J. C. Donnet retires on retired pay (dated May 7th, 1913).

Lieutenant-Colonel H. P. G. Elkington has been appointed to hold charge of the Military Hospital at Shorncliffe. Lieutenant-Colonel A. R. Aldridge, C.S.I., has taken over charge of the Medical Division of the Royal Herbert Hospital. Lieutenant-Colonel R. Holyoake has been selected for appointment as Senior Medical Officer of the North-Eastern Coast Defences at Chatham. Lieutenant-Colonel R. H. Penton, D.S.O., has been transferred from the Poona Cantonment to Muttra Cantonment. Lieutenant-Colonel A. W. Bewley has taken up duty at Military Headquarters, York, as Deputy Assistant Director of Medical Services. Lieutenant-Colonel T. B. Winter has been granted leave of absence. Lieutenant-Colonel M. O'D. Braddell has arrived home on leave of absence from India. Lieutenant-Colonel D. M. O'Callaghan has been appointed to hold charge of the Military Hospital at Hilsea. Lieutenant-Colonel M. W. Russell has been placed under orders for service abroad.

Major G. Baillie has arrived home for duty. Major E. W. Bliss has been appointed Specialist in Advanced Operative Surgery to the Fourth (Quetta) Division. Major C. E. P. Fowler has taken up duty in the Aldershot Command as Instructor at the School of Army Sanitation. Major E. W. W. Cochrane has arrived home for duty from Bermuda. Major T. C. Mackenzie, D.S.O., has been appointed to the Eastern Command. Major T. B. Unwin has left the London District for Sierra Leone Protectorate. Major R. F. M. Fawcett has joined the Dublin District. Major J. T. Johnson has been transferred from the Military Hospital at Meerut Cantonment to Bareilly. Major W. P. Gwynne has been granted six months' leave of absence home from India. Major J. G. Churton has taken up duty as Specialist in Advanced Operative Surgery to the Ninth (Secunderabad) Division of the Southern Army in India. Major A. L. A. Webb has been appointed to the Scottish Command. Major F. W. Cotton has left Fleetwood for Nasirabad. Major G. J. Houghton has embarked for service on the West Coast of Africa. Major W. M. Power has arrived home for duty from Jamaica. Major W. L. Baker has been appointed Specialist in Ophthalmology at Malta. Major C. M. Fleury has taken over charge of the Military Hospital at Kowloon, Hong-Kong. Major G. B. Crisp has been appointed to the Recruiting Medical Staff in the London Recruiting Area. Major L. Addams-Williams has been placed under orders to proceed abroad. Major R. L. Argles has been transferred from Tralee to the Military Hospital at Cork. Major J. F. Kelly has taken over duty as officiating Assistant Director of Medical Services to the Colchester District during the absence on leave of Colonel Jencken.

Captain T. T. H. Robinson has arrived home for duty from Nasirabad. Captain J. C. L. Hingston has been appointed Specialist in Dermatology and Venereal Diseases to the Burma Division. Captain W. B. Purdon has been granted leave of absence home from India for eight months with permission to revert to the Home Establishment for duty on the expiration thereof. Captain K. Comyn has embarked for service at Malta. Captain A. W. Bevis has arrived home for duty from South Africa. Captain J. C. Hart has been appointed to the Military Hospital at Hounslow. Captain J. B. Hanafin has been transferred from the Military Hospital at Peshawar to Nowshera Cantonment. Captain C. M. McQueen has taken up duty in the Western Command on return from Pretoria. Captain A. E. B. Jones has been appointed a Specialist in the Prevention of Disease at Bangalore and placed in charge of the Bacteriological Research Laboratory at Brigade Headquarters. Captain J. B. Meldon has been placed under orders for a tour of service abroad during the coming trooping season. Captain G. H. Stack has arrived home for duty from the Sierra Leone Protectorate. Captain A. B. Smallman has been transferred from London to Aldershot. Captain G. G. Collet has been appointed Specialist in Dermatology and Venereal Diseases to the Fourth (Quetta) Division of the Southern Army in India. Captain V. C. Honeybourne has arrived home for duty from India.

INDIAN MEDICAL SERVICE.

The King has approved of the promotion of Major Thomas Stodart to Lieutenant-Colonel (dated Jan. 30th, 1913).

Colonel G. W. P. Dennys, Inspector-General of Civil Hospitals in the Central Provinces, has been granted eight months' combined leave of absence home from India.

Lieutenant-Colonel J. G. Hulbert, civil surgeon at Muttra, has been transferred to Moradabad as Civil Surgeon. Lieutenant-Colonel W. P. R. Edwards, chief medical officer in the North-Western Frontier Provinces, has been selected for appointment to officiate as Inspector-General of Civil Hospitals in Bengal during the absence of Colonel J. Harris. Lieutenant-Colonel R. Robertson has been appointed to officiate as Assistant Director of Medical Services to the Kohat Brigade, in succession to Lieutenant-Colonel J. T. Daly. Lieutenant-Colonel J. T. Calvert has been granted eight months' leave of absence home from India.

Major D. McCay has taken up duty as Professor of Materia Medica at the Government Medical College, Calcutta. Major S. P. James has been transferred from Simla to Ceylon for special duty under Government. Major A. G. McKenrick has been granted one year and nine months furlough, combined with leave of absence home from India.

Captain A. Whitmore has been appointed Police Surgeon and Pathologist at the General Hospital, Rangoon, in succession to Captain N. D. Saigol. Captain S. T. Crump has been appointed Civil Surgeon at Myaungmya. Captain G. I. Davys has been appointed Specialist in the Prevention of Disease, and placed in charge of the Bacteriological Research Laboratory at Brigade Headquarters, Jubbulpore. Captain C. F. Marr has been appointed to officiate as Medical Storekeeper to the Government of India at Lahore Cantonment, in succession to Major A. A. Gibbs. Captain J. M. A. Macmillan, civil surgeon at Jubbulpore, has been transferred to Amraoti on relief by Major A. M. Fleming. Captain G. Fowler has been granted four months' extension of leave of absence home from India on medical certificate. Captain H. C. Buckley has been transferred from Basti to Muttra as officiating Civil Surgeon

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned to be Lieutenants (on probation):—James Rafter (dated April 9th, 1913). Cadet Colour-Sergeant Francis Gregory Foster, from the Edinburgh University Contingent, Officers Training Corps (dated April 12th, 1913). Cadet Corporal Walter Elliott Elliott, from the Glasgow University Contingent, Officers Training Corps (dated April 12th, 1913). Cadet Corporal Robert Gerald McElney, from the Belfast University Contingent, Officers Training Corps (dated April 15th, 1913).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Highland Mounted Brigade Field Ambulance: Lieutenant John M. Grant resigns his commission (dated May 3rd, 1913).

1st South Midland Mounted Brigade Field Ambulance: Lieutenant Douglas M. Spring to be Captain (dated April 30th, 1913).

5th London Field Ambulance, Royal Army Medical Corps: Lieutenant John P. Grainger resigns his commission (dated May 3rd, 1913).

2nd West Lancashire Field Ambulance, Royal Army Medical Corps:—Quartermaster and Honorary Lieutenant John Quail resigns his commission (dated May 3rd, 1913).

2nd Western General Hospital, Royal Army Medical Corps.—The undermentioned officers resign their commissions: Lieutenant-Colonel Abraham M. Edge (dated May 3rd, 1913). Captain Henry R. Hutton (dated May 3rd, 1913).

1st Northumbrian Field Ambulance, Royal Army Medical Corps: Joseph Wilfrid Craven (late Cadet Quartermaster-Sergeant, Durham University Contingent, Senior Division, Officers Training Corps) to be Lieutenant (to be supernumerary) (dated March 22nd, 1913).

1st Southern General Hospital, Royal Army Medical Corps: Major William F. Haslam to be Lieutenant-Colonel (dated April 5th, 1913). Captain George Heaton to be Major (dated April 5th, 1913).

Sanitary Service.—Major William James Howarth, from Sanitary Officer, Home Counties Division, to be Major, whose services will be available on mobilisation (dated May 7th, 1913).

Attached to Units other than Medical Units.—Major Walter M. Hamilton resigns his commission, and is granted permission to retain his rank and to wear the prescribed uniform (dated May 7th, 1913). Lieutenant William R. Wilson resigns his commission (dated May 7th, 1913). Lieutenant William A. Valentine to be Captain (dated May 24th, 1912).

For attachment to Units other than Medical Units.—Harry Leon Gauntlett to be Lieutenant (dated April 1st, 1913).

Captain Norman Edwin Dunkerton, R.A.M.C., to be an Adjutant of a School of Instruction, vice Major Thomas E. Fielding, vacated (dated March 31st, 1913).

ARCHIVES DE MÉDECINE ET PHARMACIE NAVALES.

In the number for February Médecin Principal (Fleet-Surgeon) Dr. Tribondeau discusses the treatment of syphilis. The scheme he favours involves three intravenous injections of 0·6 gramme of salvarsan at weekly intervals, repeated every two months, till the Wassermann reaction becomes negative, or 0·04 gramme of biniodide of mercury or 0·03 gramme of cyanide of mercury intravenously every day for 20 days, repeated, like the salvarsan, if required. As the treatment is so definite and defined it must not be entered upon unless an assured diagnosis of syphilis has been made, nor, on the other hand, can delay in making the diagnosis be permitted, for treatment, destroying the treponemata, sets up a reaction (Herxheimer's reaction) which may cause ill-effects, and is far less severe if the organisms are still all collected together in the chancre. Early exact diagnosis is, therefore, of the first importance, and the paper is chiefly concerned with the demonstration of T. pallidum in smears from the primary lesion. The directions for doing this are as follows: Make small incisions into the margin of the chancre. Take a smear of the blood and serum which exude. Fix in a solution of 1 per cent. glacial acetic acid and 0·8 per cent. formalin. This also dissolves out the hæmoglobin which is apt to conceal the parasites. Rough dry the slide, wash in alcohol, and flame that off. Gently heat with 5 per cent. tannic acid solution. Wash in water and stain with a slightly warmed ammoniated nitrate of silver solution (to 5 per cent. nitrate of silver solution add ammonia solution till the precipitate first formed is just redissolved, then add a few drops more of the nitrate solution till the precipitate just reappears). Wash in distilled water and dry. The films should be chestnut coloured; if they have only become yellow, the staining from the tannic acid onward should be repeated at once. Do not examine in Canada balsam or in acid cedar oil, but in neutral cedar oil or, failing that, in neutral castor oil. The T. pallidum stains a dark chestnut. Médecin en Chef (Deputy Surgeon-General) Dr. Bonain describes the new pattern formalin disinfector for bedding and clothes now used in the service afloat. It is 6 ft. high by 4 ft. broad by 2 ft. deep. Formalin solution is evaporated in it by an electric heater at a temperature of 85° C. and upward. Médecin Principal (Fleet-Surgeon) Dr. Forgeot details a very instructive case of tuberculosis of glands. The patient, a sick berth steward, was taken ill in a ship off the coast of Morocco in September with enlarged glands in the neck, and was treated with iodine and arsenic, but suppuration threatened in January; the abscess was punctured in March and was healed by the end of April. In May further swellings appeared and he lost flesh. In June he had attacks of dysphagia and dyspnœa; there was no sign of pulmonary infection. On July 14th he was sent to hospital at Tangiers as his ship was going to sea, and he rejoined her on August 8th for passage home, but died on August 12th after a sudden hæmoptysis of six pints. At the post-mortem examination the left pulmonary artery and the left bronchus were found involved in the periadenitis about a tuberculous gland. The artery had ruptured into the bronchus. There was no tubercle in the lungs, only in the glands. Fleet-Surgeon Gaskell's useful lectures on First Aid are translated into French in abstract. 700 copies of this journal are issued monthly. Twelve medical officers of the French Navy have recently been appointed to or promoted in the Legion of Honour.

6TH LONDON FIELD AMBULANCE, R.A.M.C. (T.F.), 2ND LONDON DIVISION.

Two vacancies exist for a senior and junior officer in the above unit. Applications should be addressed to the Officer Commanding at the Duke of York's Headquarters, Chelsea, S.W. This is the only Field Ambulance of the County of London quartered in this district, and it consequently offers many advantages as regards attendances for instruction and the use of a comfortable mess. The hours and days for attendance are so arranged that interference with private work is reduced to a minimum. Transfers from other corps can be arranged if deemed expedient.

BRISTOL CHILDREN'S HOSPITAL: LADIES' AUXILIARY.—During the past year this organisation collected 1789 articles of household linen and clothing for the hospital, also £1000 7*s.* 9*d.*, of which over £900 were handed to the treasurer of the hospital.

LEEDS GENERAL INFIRMARY: RESIGNATION OF MR. H. LITTLEWOOD.—The resignation of Mr. Littlewood from the staff of the infirmary, though it does not come as a surprise to his colleagues, is none the less a cause of very sincere regret to them; and this regret will spread to the whole profession in Yorkshire when it is known that it is his intention to retire altogether from practice at the end of the present month. Mr. Littlewood's work in Leeds is very well known. He went to that city as resident surgical officer in 1886, and from that date until the present his connexion with the infirmary was severed for only a few months. At the University he held the position of honorary demonstrator of surgical pathology, and was afterwards lecturer on practical and operative surgery and latterly professor of surgery. At a meeting of the board of the infirmary held on May 2nd, under the chairmanship of Mr. Charles Lupton, a resolution was passed expressing deep regret at Mr. Littlewood's resignation and appreciation of his great services. It is not too much to say that his colleagues will hardly know the infirmary for some time without his genial presence, and his departure will be regretted by all.

Correspondence.

"Audi alteram partem."

RESEARCH DEFENCE SOCIETY.

To the Editor of THE LANCET.

SIR,—We have carefully considered what course our society ought to pursue in view of the recent exposure of antivivisection. We are of opinion that the society ought to maintain for some years in London a place of its own, where it could put before the public, every day and all day long, the truth about experiments on animals in this country. We have tried this method in temporary premises and have found it abundantly successful, and we now have the opportunity of acquiring a small ground floor and basement at a moderate rent in one of the more important thoroughfares admirably suited for our work. It is the plain duty of all who desire the prevention of disease among mankind and among animals to help "the man in the street" to arrive at a right judgment in this matter. We are convinced from experience that the best way of dealing with antivivisection methods at the present time is to maintain a bureau where all passers-by can read and learn for themselves the truth about experiments on animals, and can obtain pamphlets and leaflets, and ask for further information.

We therefore appeal for generous contributions towards a special fund for this one purpose. It is the especial business of the Research Defence Society to dispel the ignorance, or worse than ignorance, which still exists as to the character and the object of experiments on animals in this country; and the maintenance of a bureau in London would be of an immense advantage to the work of the society. All donations and subscriptions should be sent to the honorary treasurer, 21, Ladbroke-square, London, W. All cheques should be crossed Messrs. Coutts and Co.

We are, Sir, yours faithfully,

DAVID GILL, President.
CROMER, Vice-president.
SYDNEY HOLLAND, Chairman of Committee.
ARTHUR R. CUSHNY, ELDRED HORSLEY, REGINALD TALBOT, BEATRICE LESLIE THOMSON, } Members of Committee.
F. M. SANDWITH, Honorary Treasurer.
STEPHEN PAGET, Honorary Secretary.

May 5th, 1913.

WHEN TO OPERATE IN APPENDICITIS.

To the Editor of THE LANCET.

SIR,—Most surgeons will agree with Mr. W. H. Battle that it would be a great gain and a sign of progress if we had the power to forecast which of our cases of acute appendicitis were going to "fulminate" and which were going to quiet down, so that we might operate at once on the former group, and leave the latter for the safer "interval" operation. He can only appeal to "experience to give the skill" to decide the issue. But the greater number of patients with acute appendicitis cannot have the advantage of a man with Mr. Battle's skill and experience to decide the question for them. Something more definite is required for the ordinary practitioner if progress is to be made. I have lately employed a method whereby I think it is not difficult for anyone of average skill and experience to determine what is going to happen in any given case.

Every patient with the diagnosis of acute appendicitis that comes into my wards at the London Hospital is at once put to bed on the back in the head-up ("Fowler") position and watched. The directions are: "no food, no drink, no purge, no enema, no opium." *An hourly chart* of the temperature, pulse-rate, and respiration-rate is at once started and a mental note is made of the severity of the pain and deep tenderness. At the end of four to six hours (usually four) the chart is reviewed, and the abdomen again examined. If the temperature, pulse-rate, and respiration-rate are all falling and if the pain is less no operation is performed and these patients soon settle down into "interval" cases. But if any one of these four things is no better or is worse then an operation is at once performed, and so far I have had no reason to doubt from the operative findings that the peritonitis was spreading and needed immediate operation.

I would therefore appeal to the practitioner to make trial of this method directly he is called to a patient with severe abdominal pain, especially if accompanied by fever. Let him at once take steps to call in a surgical opinion, but let him employ the interval before the surgeon can arrive in placing the patient in the Fowler position by putting two kitchen chairs under the head end of the bed, and in preparing an hourly chart. An intelligent mother can easily be taught how to prepare the chart if it is not possible for the practitioner to do so himself. Meantime, while the surgeon is on his way to the case, valuable time will not have been wasted, and when the surgeon arrives there will be some definite evidence for him to go upon in forming an opinion as to immediate operation or expectant treatment. I exclude cases seen within the first 12 hours of their illness, as these are practically the same as interval cases from the operative standpoint, and should always be operated on at once.

I am, Sir, yours faithfully,

Harley-street, W., May 3rd, 1913. FRANK KIDD.

ALIMENTARY TOXÆMIA.

To the Editor of THE LANCET.

SIR,—I have read with the greatest interest the remarks of Professor Arthur Keith in your issue of April 26th, pp. 1163–4, for the verdict of my whole life's work may be summed up in his words that "the fuel of the human engine is at fault."

Fortunately for myself, I studied natural history at Oxford under the late Professor Rolleston, Professor Sir E. Ray Lankester and others, as a groundwork for pathology and medicine; for those who have studied even the rudiments of the first-named subject there can be little doubt that Professor Keith is right. I agree with him also from the pathological side, that this problem of the large bowel is a child of our ignorance. Constipation, the "British disease," as a rule, disappears completely, even in those who suffered most severely from it, when they come to live on a natural diet. I agree also that all specimens of the large bowel removed by operation should be most carefully examined. In reference to the specimen Professor Keith mentions, those who have read my paper on "Gout of the Intestines" in the *Medical Record* of New York for October, 1912, will have no difficulty in accounting for some of the conditions that were found.

With regard to bacteriology, about which so much was said by other speakers, I know from experience that the presence of microbes in abnormal quantities or in unnatural places is very often a mere matter of circulation. Thus they are found in the old and young, in the feeble, and in those whose hearts are weak, under-nourished, or strained. Defective capillary circulation in the tissues of the body is the microbes' chance, and unnatural food, introducing waste products which obstruct and slow the capillary circulation, is often a large factor in that chance.—I am, Sir, yours faithfully,

Brook-street, W., May 3rd, 1913. ALEXANDER HAIG.

To the Editor of THE LANCET.

SIR,—I intended to describe the following case at the discussion on the above subject at the Royal Society of Medicine, but as the list was closed when I applied I should like to record it in your columns.

My patient is an unmarried woman, aged 29, who came to me on Nov. 21st, 1911, complaining of pain in her joints. She was formerly a nurse. Her health has always been poor. Her present illness began 15 years ago with an attack of influenza, which was followed by pain and swelling, first of the wrists and fingers, later of the knees. Fourteen years ago menstruation began, and has since usually occurred every fortnight; it lasts usually four days, and the pain often sends her to bed. About this time pain gradually began in the spine. Eleven years ago she had a fourth severe attack of chorea. She improved somewhat after this, but a year later had typhoid fever, which was followed by cystitis and constipation and by pain and swelling of the ankle and temporo-maxillary joints. Seven years ago she had laryngitis and a septic throat; this was followed by leucorrhœa and palpitation of the heart, which have continued ever since. Then both elbows became affected and

the condition generally had been progressively worse ever since. She was treated at Harrogate, Buxton, and here by diets, douches, massage, electricity, ointments, splints, and by guaiacol, salicylates, and many other drugs. Beyond a temporary improvement from thiocol and from local counter-irritation the result was *nil*.

When she came to me she walked with a limp, was poorly nourished, asthenic, and despondent. The hands and feet were cold, the hands being clammy and cyanosed as in Raynaud's disease. There was an offensive odour of the skin, and pigmentation of the eyelids and temples. The weight was 8 st. 4 lb. There were pain and tenderness, with effusion and periarticular thickening of some of the metatarso-phalangeal joints, of both wrist, elbow, and knee-joints. Pain in the temporo-maxillary and hip-joints, and pain and swelling over the cervical and upper dorsal vertebræ, and of both shoulder-joints. There was creaking of most of the joints and along the extensor tendons of the forearms. The right elbow was immobile, and there was very little movement of the wrist-joints and limited movement of the spine. There were no Heberden's nodes or osteophytic outgrowths, and no ulnar deviation of the fingers. There was anorexia with a furred tongue, but no vomiting, and the bowels acted only with purgatives. The fæces showed a few undigested muscle fibres under the microscope, but were otherwise normal. The total urine in 24 hours was 42 ounces, there was no albumin or sugar, the chlorides were about normal, and there was a trace of indican. A diagnosis of rheumatoid arthritis was made.

I searched for every possible source of sepsis but found none. Nor did a dentist who examined her teeth, or a laryngologist and rhinologist who examined her nose and throat. A gynæcologist also investigated her and found no sign of tubercle or gonococcus infection, but only a simple endometritis, for which the uterus and cervix were curetted and otherwise treated. During the year which she spent under my care I treated her with thyroid gland, paraffin, potassium iodide, and many other drugs, with iontophoresis and passive congestion to the joints, and with electricity and massage, and with various diets, the result being *nil*. I then persuaded her to fast for 14 days. During the fast she was mostly in bed, drank hot water every three hours, and had a soap-and-water enema every other day. She felt weak but never hungry. The result was striking. On the fourth day pains began to diminish, and on the eighth day there was no longer pain in any joint, and swelling and effusion continued to diminish until the end of the fast. On the third day after beginning to eat the joints began to swell and be painful, and in a few days became as bad as ever. While under my care she had three mild attacks of cystitis. A coliform bacillus was isolated from the urine.

During three months she was treated by a vaccine made from this bacillus. The joints reacted to this vaccine, and there was a slight but transient improvement on the whole. While under my care there was never any pyrexia, the temperature being usually 96·4° F. in the mouth. The joints were always worse in hot weather. Five grains of carmine by mouth in a cachet appeared in the stools from 18 to 85 hours later. Last October I X-rayed her after a meal containing ℥ii of bismuth oxychloride, and found that the greater curvature of the stomach was 1½ inches below the umbilicus, and that after 7 hours the bismuth was all in the small intestine, after 17 hours all in the ascending colon, and after 46½ hours some in the dropped transverse colon and some in the pelvic colon. Between the last two observations a black motion was passed. All the observations were made with the patient in the standing posture.

Since all the evidence now seemed to incriminate the intestine, and since the disease was slowly progressing, I sent her into Guy's Hospital on Dec. 15th last under the care of Mr. W. Arbuthnot Lane. Here Dr. A. C. Jordan X-rayed her in a recumbent posture after a meal containing ℥vi of bismuth oxychloride, and the following observations were recorded:—

After eight hours: Terminal coil of ileum hypertrophied. Transverse colon greatly dropped. After this the bowels acted. After 32 hours: All the bismuth in the cæcum, ascending, and transverse colon. After 56 hours: Same as the last, also some bismuth in the pelvic colon. After 104 hours: Traces of bismuth in the cæcum and ascending colon, the remainder in the transverse, descending, and pelvic colon.

On Jan. 3rd Mr. Lane performed the following operation:—

As soon as the patient was under the anæsthetic, continuous infusion with normal saline was started. An incision about nine inches long was made through the left rectus close to the middle line, and the peritoneal cavity opened. A marked kinking was found at the lower end of the ileum, about three inches from its junction with the cæcum, due to an adventitious mesentery attached to the bowel some distance from the true mesentery, and behind to the root of the mesentery. The duodenum was large, but not so noticeably so as in some cases. The ileum above the kink was clamped, tied, and divided, the ends being cauterised. The distal end was invaginated by purse-string sutures of thread. The lower part of the pelvic colon was brought out of the wound, clamped by intestinal forceps, and an end to side anastomosis made between the ileum and pelvic colon. Above the anastomosis the pelvic mesocolon was shortened by means of a thread suture so as to exaggerate the "last kink" and to prevent regurgitation of fæces from the rectum into the colon. Then the hole left between the mesentery and the pelvic mesocolon was closed with a continuous suture. A rubber tube was passed up the rectum and guided from the inside through the opening into the ileum and passed up the ileum, a quantity of paraffin being injected through the tube. The abdominal wall was closed in layers. A hot fomentation covering the whole of the abdomen was used as a dressing and changed four hourly. After 48 hours the rectal tube was removed.

Four days after the operation all the joints began to improve, and three weeks later the general condition began to improve, and improvement since has been uninterrupted. Her present condition is: Weight 9 st. 7 lb.; the appetite is good, the tongue clean, and she is cheerful and well nourished, and the hands have lost their former Raynaud-like appearance, and the offensive odour of the skin is much less. The gynæcologist referred to above has recently seen the patient and writes to me about the "immense improvement in the appearance and general condition of the patient after the operation." Beyond some pain in the right elbow, there is no longer pain or tenderness in any joint, and there is a slightly increased range of movement in all joints, the right elbow showing some movement. There is still much periarticular thickening and some bony grating of the left shoulder-joint, but no effusion into any joint. There is some "thumping of the heart when fatigued," and a faint mitral systolic murmur can now be heard, but there is no enlargement of the heart. There is no leucorrhœa, no induration of the left breast, and menstruation occurs every four or five weeks. The first menstruation after the operation was "rather bad, not anything to speak of since." She is swallowing enough paraffin to ensure defæcation twice a day. Carmine taken by the mouth appears in the stool 16 to 24 hours later. The fæces are formed and of normal appearance. Under the microscope there is a little mucus intimately mixed with the fæces, and a few undigested muscle fibres. The urine contains a very faint trace of indican, the chlorides are abundant, and it is slightly turbid from the same coliform bacillus from which the vaccine was made.

In conclusion, I should like to express my appreciation of the work of Mr. Lane and Dr. Jordan in this case.

I am, Sir, yours faithfully,

Waterloo, Liverpool, April 24th, 1913. SYDNEY WHITAKER.

THE TREATMENT OF ARTERIO-SCLEROSIS AND HIGH TENSION.

To the Editor of THE LANCET.

SIR,—A recent discussion on the above subject at the Medical Society of London raises a question which you may think worth an airing. Those who were present at the meeting on April 28th, to which I refer, were provided with many instructive items; but the remarks of all the speakers I heard were directed to the treatment of these ailments from the date at which they become productive of symptoms. I submit that treatment begun at this stage is begun in most cases at least ten years too late to be remedial, however precious it may be for palliative purposes. It is the generally received opinion that arterio-sclerosis and high tension are not usually vices inherent in the circulatory system, but are the outcome of composite metabolic faults operating over a long period of years; and further, that they are themselves no more than secondary manifestations indicative of permanent mischief already accrued to vital organs, notably the kidneys. Your readers will recognise in the following synopsis a common type of case which matures to symptoms between the fifties and sixties. Chapter I.: Chronic metabolic poisoning; growing blood pressure; no arterio-sclerosis. (Curable.) Chapter II.: Chronic metabolic poisoning; high blood pressure; commencing arterio-sclerosis; no symptoms. (Less curable.) Chapter III.: Chronic metabolic poisoning; high blood pressure; arterio-sclerosis; symptoms. (Incurable; to be palliated only.)

It appears, then, that the bulk of the patients whom we treat for arterio-sclerosis and high tension have already passed through two preliminary phases, each of some years' duration, phases during which it might be claimed with some justice that a cure can be found for the ingravescent fault. But how are these phases to be detected in time? It seems to me that there is only one answer to this question. We cannot cure the faults which underlie arterio-sclerosis and high tension unless we can persuade the public that periodical medical examinations during periods of health are as vital to their bodily security as are periodical visits to the dentist to the welfare of their teeth. At present they come to us to be cured at a stage when a cure, too often, is already past hoping for, and I venture to suggest that we have submitted too readily to the popular assumption that we have cures at our command for these and other slow fruitions of insidious diseases. There is a glamour about the word "cure" which fascinates the layman; and for ourselves a flattering echo lurks about it which tempts acquiescence in the claims the public makes on our behalf. But surely it would be plainer dealing if we said outright: "Come to us in time and we can do a good deal, by common-sense advice on diet and hygiene, to cure you in advance of many of the ills which may be threatening you; but we cannot re-make organs already damaged past repair."

If there be truth in what I say it follows that people should be brought to see that periodical visits to the doctor for a general overhaul and advice constitute an insurance against a good many preventable diseases. It is an invidious necessity that their education in this particular should fall upon ourselves, but no one else can take the matter off our hands. No doubt cynics will accuse us of self-seeking, though I think we should gain more in satisfaction than in money in the long run. In any case we could afford to put up with the jeer till it died a natural death if, as seems to me to be axiomatic, arterio-sclerosis and its congeners—high blood pressure and chronic interstitial nephritis—can only be cured by preventing them.

I am, Sir, yours faithfully,

WILLIAM P. S. BRANSON.

Devonshire-place, W., April 30th, 1913.

ENDEMIC GOITRE: THE CAUSATIVE FACTOR.

To the Editor of THE LANCET.

SIR,—A critical study of the investigations, deductions, and conclusions of Major R. McCarrison relating to Endemic Goitre[1] will show that the "toxic agent" has escaped his observation. For example, a study of the various probable causes, such as the influence of the soil, the chemical substances in water, together with the experimental production of the disease in man, all go to show that there is some radical defect in the hypothesis that endemic goitre is due to a "living excitant." That there is a causative factor cannot be denied, but it cannot be detected in humid soil or in arid areas. Neither can it be charged to the presence of inorganic substances in water, because it is known that endemic goitre prevails in communities where rain-water exclusively is used, and also where melted snow furnishes the supply. Numerous authors are quoted to confirm the theories advanced, that of Baillarger (1873) as follows: "Chemical analyses do not support the view that goitre is due to the presence of chemical salts in the water."

The "lime and magnesium theory" is dismissed as untenable, simply because the investigators have failed to demonstrate that the presence of either one or both exercises any influence whatever upon the production of the disease, and I shall not be anticipating my conclusions relating to the influence of lime and magnesium when I give consent to the proposition that the mineral constituents of the water may be entirely without effect; that, however, does not exclude the possibility of these minerals becoming the causative factor in the production of the disease, since we have to deal with both in the dietary. The question is, How is it possible to connect the influence of the water or the soluble substances which it contains with the appearance of the disease in endemic form?

To clear up this question let us take the statistics given on p. 221 from seven villages in the Gilgit Fan, containing all told a population of 2192. Water was supplied to these villages in succession, and the prevalence of goitre as given in the table shows a remarkable increase as the water-supply advances. In the first village, with 93 inhabitants, the per centage of population affected is 11·8; in the fourth village, with 718 inhabitants, the percentage of goitrous population is 20; while in the seventh village, with 128 inhabitants, the goitrous population is 45·6 per cent. Now, while it seems probable that the water in this section or some substance dissolved in it was responsible for the rapid increase of goitrous population, it does not entirely convince, but we must bear in mind that under these circumstances the presence of nitrites is almost certain. This is better shown in Gaylord's observations on fish, also quoted, that fish in the water above the tanks were goitre free, while the percentage of goitrous fish in the first, second, third, and fourth tanks was 3, 8, 45, and 84 respectively. In explaining his theory to account for the rapid increase of goitre in the successive tanks, Major McCarrison traces it to their habit of "nosing about the walls and in the bottom of the tanks," which are precisely the places where suspended matter deposits itself in the form of remnants of food, forming a nidus for the growth of numerous bacteria and animalculæ. Further, he holds that it is in these deposits that we must look for the cause of the disease, since it existed neither in the water flowing into the first tank, nor from that escaping in the last, in sufficient quantity to cause goitre.

Evidence of a like character is to be found in the observations of Dr. Marine and Dr. Lenhart relating to the presence of goitre in artificially bred trout, but in this case the water in which these brook trout develop goitre most actively was not allowed to come in contact with the soil, and thus we have a demonstration that the presence of inorganic matter in the water had nothing to do with endemic goitre. A like conclusion is warranted in the case of goitre in man artificially produced in no less than eight experiments, the former conclusion being confirmed by the statement that "all of the cases of artificially produced goitre were rapidly cured by the administration of thymol." At this point should be mentioned the experimental investigations of M. Trillat, as published in THE LANCET of Dec. 14th, 1912, p. 1670. M. Trillat found that "certain putrid gases dissolved in water exercised a favourable influence on microbes contained in it," and further, that these volatile, alkaline substances exerted an activating effect on germs. Even so small a percentage of ammonia in the air as "1 to 5,000,000 exerted a favourable influence, although much less than that of the amides of the fatty series produced in putrefaction." Now this evidence has a direct bearing upon the present question because of the fact that while decomposition of the fatty series is augmented by the presence of nitrites, there is a marked derangement of the proteid metabolism, and thus the susceptibility to various organisms, pathogenic and non-pathogenic, is increased.

To the impartial student a careful examination of these records will show beyond question that the normal constituents of water are not responsible for goitre. They show, further, that whatever influence may have been produced upon the thyroid gland was due to the presence of nitrites, because we know that in ordinary cases of indigestion we have disordered proteid metabolism, together with the production of amides—as a consequence, a multiplicity of acute, subacute, and chronic disorders. It remains to be demonstrated, however, that these intestinal disorders may lead to goitre, as well as to other disorders when the conditions are favourable. It would not be profitable to discuss here various questions relating to the influence of climate, hereditary tendencies, environment, &c., because we can locate and identify the causative factor when we understand the nature of the inorganic chemical changes which take place as a result of chemical deviations in the body fluids (blood and lymph) and tissues. In the accompanying tabulation, showing *mineral depletion from a "cracker" diet*, I have only changed the data by adding the equivalent of the metric figures in grains, using 15·43 as the equivalent of one gramme, so that the figures are approximately correct for two decimal places.

The following quotation from the authors gives a very complete description of the experiment. The daily diet consisted of 450 grammes of the same lot of soda crackers as were used in the first and second experiments, with an

[1] The second Milroy Lecture, THE LANCET, Jan. 25th, 1913, p. 219.

average of 1200 grammes of distilled water per day. The crackers supplied 43·9 grammes protein, 44·7 grammes fat, and 339 grammes carbohydrates, the total fuel value being 1930 calories. The average daily income and outgo of mineral constituents and nitrogen are shown in the following table:—

*Table showing Mineral Depletion—"Cracker" Diet.**

Kind of material.	Calcium oxide.		Magnesium oxide.		Phosphorus.		Nitrogen.	
	grm.	gr.	grm.	gr.	grm.	gr.	grm.	gr.
Food per day:—								
Bread (crackers) ...	0·126	1·94	0·079	1·22	0·401	6·19	7·02	108·32
Distilled water ...	—	—	—	—	—	—	—	—
Total daily income...	0·126	1·94	0·079	1·22	0·401	6·19	7·02	108·32
Fæces:—								
Total for three days	3·690	56·94	0·379	5·86	1·355	20·91	—	—
Average per day ...	1·230	18·98	0·126	1·94	0·452	6·97	(0·70)	(10·80)
Urine:—								
First day (June 3-4)	0·062	0·96	0·086	1·33	0·986	15·21	10·64	164·17
Second day (,, 4-5)	0·044	0·68	0·095	1·47	0·622	9·60	10·46	161·40
Third day (,, 5-6)	0·056	0·86	0·098	1·51	0·476	7·34	9·77	150·75
Total for three days	0·162	2·50	0·279	4·40	2·084	32·16	30·87	476·32
Average per day ...	0·054	0·83	0·093	1·44	0·695	10·72	10·29	158·77
Total outgo per day	1·284	19·81	0·219	3.38	1·147	17·70	10·99	169·57
Loss per day	1·158	17·87	0·140	2·16	0·746	11·51	3·97	61·26

* Adapted from the monograph Calcium, Magnesium and Phosphorus in Food and Nutrition, by Henry C. Sherman, Arthur J. Mettler, and J. Edwin Sinclair, Department of Chemistry, Columbia University, New York. Washington, D.C., 1910.

As a result of this experiment with the cracker diet the authors remark: "There was some lack of appetite, and at times a slight feeling of fulness and thirst after meals. There was also in this, as in the second experiment, a slight tendency toward looseness of the bowels." In this experiment it will be noticed that there was a marked daily loss of lime over and above the intake; that the loss of magnesium was out of proportion to the loss of lime; and that the daily loss of phosphorus was nearly double the intake; but the most conspicuous feature relates to the daily loss of nitrogen, over 61 grains. The daily loss of lime amounted to 17·87 grains, while the loss of magnesium was but 2·16 grains; to make the proportions correct according to the intake the daily loss of magnesium should have been 11·23 grains, so that we have reason to believe that there was substitution or replacement, a condition which could take place only as a result of acid excess, the necessary and persistent concomitant of intestinal indigestion. This is the uniform condition in chronic ailments as well as during convalescence from acute diseases, the patient is suffering constantly from lime depletion incident to intestinal indigestion and acid excess due to an unsuitable dietary.

Within recent years an effort has been made to exploit the advantages of organic phosphorus, and we see here the loss is nearly double that of the intake, but the superficial reader must not assume that organic phosphorus is all-sufficient. A similar criticism might be offered relating to the excessive output of nitrogen in the form of ammonia through the kidneys, but I have already developed this feature in speaking of the constitutional effects of nitrites in the polluted water. Any attempt to correct this derangement of nitrogen equilibrium, either by the employment of acids (dilute nitro-hydrochloric acid) or by the administration of an alkali, like the spirit of mindererus, would be in keeping with the proposition to employ phosphorus. In either case the benefits would be transient. Along with either line of treatment it would be necessary to administer stimulants, while stimulants would require sudorifics and narcotics, so we see how the vicious circle is completed. On the other hand, by correcting the intestinal indigestion by a suitable dietary, by neutralising acid excess, which is merely a convenient term for indicating a diminished alkalinity of the blood, we should make a favourable start towards convalescence. But convalescence would not be uninterrupted without attention to the magnesium substitution or infiltration which has taken place.

In explanation of the "magnesium theory" and its responsibility for the production of goitre, it should be stated that the magnesium excess finds the organic colloids and combines chemically with them. Now, as the thyroid gland is composed largely of colloid tissue, it is readily seen how easily we can have derangement of function, with irritation and swelling and pulsation and fulness of the throat, along with nervous excitability, when magnesium infiltration has involved the gland. Proof of this is to be found from rational treatment. For example, the average adult dietary contains from 10½ to 15 grains of lime, while the average magnesium content is about one-half of this. We may assume that acid excess depletes the entire amount of lime, and prescribe an equal quantity. Patients suffering from goitre (recent cases) will promptly respond to this treatment, the nervous symptoms subsiding within a few days after beginning treatment—by administering calcium phosphate, calcium carbonate, or calcium sulphate. An interesting fact should also be mentioned here—namely, that enlargement of the gland begins to subside in about two weeks, just about the period noted by Major McCarrison as the time required to show the bad effects from water containing nitrites. In conclusion, then, there are three cardinal principles to be observed in the treatment of this disease: (1) restore the digestive capacity; (2) neutralise acid excess; and (3) promote magnesium dissociation.

I am, Sir, yours faithfully,

Philadelphia, Pa., April 15th, 1913. JOHN AULDE, M.D.

ON THE INCIDENCE OF TUBERCULOSIS IN INFANTS AS DETERMINED BY THE VON PIRQUET TEST.

To the Editor of THE LANCET.

SIR,—The von Pirquet test has lately been carried out by us upon 383 consecutive cases admitted to the wards of the Infants' Hospital. The results are shown as follows: Positive, 4; negative, 369; doubtful, 10.

The 10 doubtful cases were again tested, when one gave a positive reaction, while the others were definitely negative. The corrected results are, therefore, positive, 5; negative, 278.

From these figures it will be seen that the percentage of infants giving the positive reaction was 1·76.

We are, Sir, yours faithfully,

RALPH VINCENT, M.D. Durh., M.R.C.P. Lond.,
Senior Physician and Director of the Research Laboratory, the Infants' Hospital, London;
W. E. ROBINSON, M.D. Oxon.,
May 5th, 1913. Assistant Physician, the Infants' Hospital, London.

FREUD'S THEORY OF DREAMS.

To the Editor of THE LANCET.

SIR,—The interesting lecture by Dr. William Brown on Freud's Theory of Dreams may, I think, give rise to a needless misunderstanding on two or three points.

It is not quite clear what Dr. Brown intends to convey by stating that "as a general rule the memories most commonly aroused are those of the 'dream day' and those of early childhood." He says correctly that "memories of the dream day form part of every dream without exception." That is, they form a part of the "manifest content," which may also embody memories from any period of the dreamer's life. The memories in the latent content may likewise come from any period of life, although Freud is disposed to believe such memories would often not be strong enough to furnish a dream without some reminiscence (phantasy or reality) in the form of a childhood's wish. Too much caution cannot be taken to avoid confusing the latent with the manifest content of the dream. Freud writes: "It is quite incredible with what stubbornness readers and critics exclude this consideration and leave unheeded the fundamental differentiation between the manifest and the latent dream content."

Dr. Brown himself does not seem quite free from this "stubbornness." His hunting dream is, of course, the manifest content, and Dr. Brown seems satisfied to apply the fear felt in the dream to the hunt. Analysis might record some latent content having nothing to do with hunting and would perhaps show Dr. Brown that he no more fears hunting in

dreams than he does awake. The recurrence of the feeling will perhaps suggest to him that there is a meaning (other than fear in the hunt) behind the manifest content which is worth his analysing out. From the passage on p. 1183 it might be inferred that Dr. Jung uses his word-association test in analysing dreams. This would be an error. He employs what Dr. Brown calls the "more natural method" (although anything less "natural" than psycho-analysis I do not know). In fact, Dr. Jung now rarely, if ever, employs word-association in psycho-analysis.

Lastly, may I ask Dr. Brown which followers of Freud maintain that "the wishes forming the dream thoughts or latent content of dreams are always of a sexual nature." There are one or two persons who have separated themselves from Freud to whom this might apply, but it is hardly fair to call them "followers" of Freud unless it is literally meant that they come after Freud. Freud himself writes "that there are many dreams satisfying other than—in the widest sense—erotic needs, as dreams of hunger, thirst, convenience, &c."

Dr. Jung and the Zürich school would allow a large number of dreams whose latent content betrays no sexual character. If I may be allowed to call myself a follower of Freud, I have published some dream analyses from my patients of a non-sexual character. It must be, however, remembered that in Freud's hypothesis there are impressions received in childhood which never reach consciousness. These impressions are not so much repressed as hindered from entering consciousness. It is these wishes thus checked that Freud regards as the real inciter of the dream. There is so much tentative in the theories underlying psycho-analysis, and there are so many pitfalls for us merely medical workers, that I would like to express my delight at having reasoned criticism from so distinguished a psychologist as Dr. Brown and one so sympathetic to this work.

I am, Sir, yours faithfully,

Welbeck-street, W., April 28th, 1913. M. D. EDER.

TREATMENT OF TYPHOID FEVER BY TINCTURE OF IODINE.

To the Editor of THE LANCET.

SIR,—In THE LANCET of April 5th you note an article in the *Journal de Médecine et de Chirurgie Pratiques* upon the Treatment of Enteric Fever by Tincture of Iodine. You state that "although the therapeutic use of iodine in that disease was suggested so far back as 1859, and reference has been directed to the matter since, notably by Dr. David Walsh in 1907, no extensive trial seems to have been made of this method." Dr. G. Perez, in the above-mentioned journal, urges that the time has arrived to put this method to an extensive practical test. Perhaps I may be allowed to make a few remarks on this subject.

My experiences of enteric fever came in the early days of practice, and the results of the simple treatment in question amounted to a revelation. A mixture of equal parts of tincture of iodine and of pure carbolic acid was prescribed, with directions for two or three drops of the mixture to be added to a tumblerful of water, which was to stand constantly by the patient's bedside, to be renewed as required and to be taken freely by the patient. Under this treatment, in every case so far as I now remember, the tongue cleaned rapidly, the temperature fell steadily, diarrhœa ceased—in a word, the fever was cut short and robbed of its dangers, and normal convalescence ensued. I had many opportunities at one time of seeing enteric fever treated in this way as well as by the ordinary expectant and symptomatic plan, and the comparison was all in favour of the iodine method.

My interest in enteric fever was maintained in later years as a dermatologist, for it seemed to me that in the enteric rash we had a suggestive picture of the etiology of a large group of symptomatic eruptions. The bacillus typhosus has been found in the "rose spots," showing, from my point of view, a probable attempt on the part of the body to throw off a generalised infection by the skin channel, a process described by me in other words as that of "excretory irritation." Further, irritation of alternative excretory outlets in enteric fever not infrequently sets up such inflammations of renal and respiratory channels of excretion. On purely logical grounds, applying the general law of irritation of excretory outlets to the particular case of scarlet fever I suggested in 1897 ("Excretory Irritation," p. 37), that it was desirable to disinfect the urine as well as the other excreta in that complaint. For some years past I understand that course has been adopted in the Metropolitan Fever Hospitals. A similar suggestion was extended to the urine of enteric fever patients.

As you remark, "treatment based on bacteriological observations has of recent years attracted so much attention that the employment of drugs has not been fully investigated." That species of neglect certainly seems to have overshadowed the iodine treatment of enteric fever. Had this method been applied in the South African war, I have little doubt that many valuable lives would have been saved in our camps.

It always seemed to me possible or probable that the good effects were in all probability due to the iodising of the blood serum. It is not clear how the iodine could exercise a direct effect upon the intestinal ulcers, unless, indeed, it were first absorbed from the stomach and excreted later into the intestine. Then, again, it is interesting to speculate how far the therapeutic result would be attributable to the mere fact of supplying the patient with drinking water in which the ordinary bacteria were no longer in a living state, but reached the stomach charged with various endogenous therapeutic potentialities. However, these and other interesting problems, possibly of much practical importance, would naturally occur to any scientific investigator who might take up the matter.

I am, Sir, yours faithfully,

Harley-street, W., April 26th, 1913. DAVID WALSH.

INTRAVENOUS INJECTIONS OF IODOFORM IN PULMONARY TUBERCULOSIS.

To the Editor of THE LANCET.

SIR,—Will you kindly permit me to refer to some points in the report in THE LANCET of May 3rd on the discussion at the meeting of the Royal Academy of Medicine in Ireland on the use of iodoform in pulmonary tuberculosis.

Dr. J. B. Coleman condemns the intramuscular iodoform-benzoyl-chloride treatment. He may be right. I have no experience of it. But I must protest against that method being confused with the one I laid before the profession in 1903 and have advocated since. It is iodoform in ether alone. The introduction of "benzoyl-chloride" has completely altered this treatment, and any inferences to be drawn from it. My method is useless unless the iodoform is introduced intravenously. As Dr. W. G. Smith pointed out, a powerful and "extremely irritating compound" with independent actions of its own has been added, and these require single and separate investigation, otherwise there will be confusion. Dr. Coleman then went on to point out the low germicidal action of iodoform, and inferentially, therefore, its inutility. If so, why is it still so extensively used all over the world? Surely the profession cannot all be mistaken in their belief in its value. He also stated that dry powdered iodoform may contain living germs. So may dry boracic acid and dry corrosive sublimate wool, and so I understand may most high germicides in the dry state unless sterilised and hermetically sealed. But there is no comparison between dry iodoform and iodoform in solution in ether. Dry powdered iodoform is a very stable body, an ethereal solution of it is *extremely unstable*, decomposing rapidly, and liberating free iodine under the influence of light in the presence of oxygen or moisture. Freshly dissolved it is pale straw coloured. If this is exposed to direct sunlight it becomes as dark as the liniment of iodine in a few minutes. Continuing, Dr. Coleman emphasised the toxic properties of iodoform, giving the names of a number of distinguished medical men to support his statement. But in the report of his paper no account was given of the mode of application, the quantities used, or the duration of treatment before toxic symptoms supervened. These I maintain are necessary. Because toxic symptoms can follow the use of arsenic, strychnine, or morphia, are they to be generally condemned? Finally, he asserted that "in pulmonary tuberculosis the intravenous injection of iodoform was attended with special dangers" which he enumerated. Does Dr. Coleman make this assertion after a prolonged personal experience of the intravenous injection of an ethereal solution of iodoform, or is it supposititious? There are probably few

practitioners in the country who have given as many intravenous injections of an ethereal solution of iodoform as I have, and yet I have never once met with any symptoms of iodoform poisoning. For years I have used it in doses varying from ¼ gr. to 1 gr. and even more, regulating it according to the type and extent of the disease. At present I have eight patients in hospital. Seven of these receive 1 gr. every day for ten days, and the eighth ½ gr. After a week's interval the injections are resumed. Dr. Smith said there was justifiable doubt as to whether half a grain exercised any influence. If 1/200th gr. of nitroglycerine, 1/60th gr. of strychnine, or ¼ gr. of morphine can profoundly affect a patient, why may not ¼ gr. or 1 gr. of iodoform? We may have to abandon the idea of a directly germicidal effect, but when patients recover and remain well for years, does it not look as if our preconceived notions as to the dosage and mode of action of drugs may be wrong?

It is right that every treatment for pulmonary tuberculosis should be searchingly criticised, but only after trial and investigation. I feel sure that Dr. Coleman has no wish to condemn unfairly, or to be the cause of deterring others from trying iodoform, but it seems to me that his criticism is a little misleading. As Dr. Etienne Burnet, of the Pasteur Institute, Paris, says in his book on "Microbes and Toxins": "Things do not go on in the living body exactly as in a test tube. This fact so often referred to already must be insisted upon again. Atoxyl does not act *in vitro*, but acts in the living body. Chemical therapeutics is, therefore, not likely to become more simple. There is nothing to exclude the possibility of a drug therapy in bacterial infections, and it is always possible that our vaccines of to-day, and in particular our sera, marvellous discoveries as they are, and originating in the most scientific empiricism, may give place to physico-chemical remedies better defined and more direct. It is from chemistry that we have to expect advances in the healing art. The phrase of Duclaux is very apt in this connexion—With Pasteur chemistry invaded the field of medicine probably never to leave it."

I am, Sir, yours faithfully,

Dunblane, N.B., May 3rd, 1913. THOMAS W. DEWAR.

THE LATE MR. R. B. ETHERINGTON-SMITH.

To the Editor of THE LANCET.

SIR,—At a meeting held at St. Bartholomew's Hospital on May 1st it was decided to open a subscription list for a memorial to the late R. B. Etherington-Smith. It is suggested that the memorial should take the form of providing and endowing separate sick quarters at St. Bartholomew's Hospital for the use of the medical, surgical, and resident staff, and of providing a suitable memorial at Cambridge.

Etherington-Smith's life work was so bound up with St. Bartholomew's Hospital that this form of memorial will doubtless commend itself, not only to his colleagues in the profession, but also to the larger body of men who knew and admired him as an oarsman and friend. The scheme has received the cordial approval of his family.

Subscriptions will be received by the honorary treasurer, Dr. T. W. Shore, dean of the Medical School, St. Bartholomew's Hospital, E.C., or they may be sent to "The Etherington-Smith Memorial Fund" at the Bank of England.

We are, Sir, yours faithfully,

ANTHONY A. BOWLBY, C.M.G.,
Senior Surgeon to St. Bartholomew's Hospital.
W. B. CLOSE, C.U.B.C.
G. ACTON DAVIS,
Acting Treasurer, St. Bartholomew's Hospital.
J. H. GIBBON, C.U.B.C.
HARCOURT GOLD, O.U.B.C.
W. P. HERRINGHAM,
Senior Physician to St. Bartholomew's Hospital.
R. C. LEHMANN, C.U.B.C.,
Secretary to the Fund.
HOWARD MARSH,
Professor of Surgery, Cambridge University.
S. D. MUTTLEBURY, C.U.B.C.
GUY NICKALLS, O.U.B.C.
G. D. ROWE, O.U.B.C.
H. T. STEWARD, Leander R.C.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Radium Fund for the Royal Infirmary.

AT a meeting of the general committee of the Royal Infirmary held on May 1st, under the chairmanship of Mr. H. Wade Deacon, the following resolution was carried:—

That the committee desires to express its great appreciation of the kindly thought which prompted the editor of the *Daily Post and Mercury* to make an appeal for funds for the purchase of radium for the Royal Infirmary; and it further desires to thank him for the cheque for £2079 10*s.* 10*d.* now received, and through him to express its gratitude to all the subscribers to the fund.

A few pounds have since been received (the total amounting to £2115 4*s.* 10*d.*) and will be forwarded to the committee when the list is finally closed.

The National Insurance Act and the Health Department of the City Council.

Under the provisions of the National Insurance Act three assistant tuberculosis officers have been added to the staff of the medical officer of health. The hospitals committee, through which the appointments have been made, has selected Dr. S. W. McLellan, Dr. B. T. J. Glover, and Dr. D. J. Clark for these positions. At present only one central dispensary is in operation, but another at the south end of the city will be opened in a few days. The question of a dispensary for the northern parts of the city has not yet been finally settled. The hospitals committee has practically decided to devote the whole of the Parkhill Hospital to sanatorium purposes. Only tuberculosis cases have been treated there for some considerable time.

Proposed State Subsidy for County Asylums.

A proposal from the committee of the Rainhill Asylum, near Liverpool, will be submitted to the Lancashire Asylums Board at its next quarterly meeting to be held at Preston. The recommendation is to the effect that the Government should be asked to subsidise the board to an extent adequate to cover the salaries of the board's pathological staffs, their research work for the prevention of lunacy being a charge which ought to be defrayed from the national exchequer, and not levied upon the ratepayers of the large cities and towns which bear the chief burden of the heavy cost of public asylums. The Rainhill committee has taken up the question because of the special development of pathological research there, a museum and other facilities being offered to medical students. Liverpool has had to pay a largely increased share in the cost of lunacy in Lancashire since the basis of levying the rate has been altered from "value" to *per capita*. Any relief therefrom will be welcomed the more heartily in this city and port, too often the dumping-ground for foreign lunatics not easily to be transferred to their native lands.

A Fatal Case of Small-pox in Liverpool.

A fatal case of small-pox occurred in Liverpool the week before last. The infection in question was of outside origin, and all persons who came into contact with the deceased before removal to hospital had passed through a period of observation and shown no suspicious symptoms. With the exception of a single case which terminated fatally on board a steamer in the river, this was the only fatal case of small-pox that had been recorded in Liverpool during the last seven years. Liverpool, fortunately, is an exceptionally well-vaccinated city. Immediately on the occurrence of small-pox the medical officer of health communicates with the public vaccinators to revaccinate, if possible, all contacts, the majority of whom acquiesce without demur.

The Royal Albert Institution.

The annual meeting of the Liverpool committee of the Royal Albert Institution was held on April 29th, under the presidency of Mr. G. D. Killey. There are 24 Lancashire candidates for the 16 vacancies allotted to the county, 6 of the applicants being from the Liverpool district. There are at the present time nearly 700 feeble-minded inmates under care, and the applicants for admission are numerous and urgent. The chairman stated that the annual meeting held in Liverpool in October last proved successful, resulting in donations which increased to £938 Liverpool's contribution to the farm colony fund. A donation of £500 had since

been received from the estate of the late Sir Alfred Jones. The committee had decided to commemorate this gift by naming a bed the "Sir Alfred Jones bed." The secretary reported that during the last financial year the members of the Liverpool Ladies' Association had collected upwards of £174 in aid of the institution, making a total of £2513 collected since the formation of the association in 1899. The recent donations have considerably improved Liverpool's financial position with respect to the institution, but subscriptions are needed for the maintenance of the 40 additional patients for whom the new farm colony would provide accommodation. For this increased income an urgent appeal is made.

New Medical Officer of Health of Warrington.

Dr. G. W. N. Joseph, the deputy medical officer of health of Warrington, who has been recommended by the health committee of the Warrington corporation for the post of medical officer of health in the room of Dr. J. C. Hibbert, appointed to a similar office at Blackburn, is an M.D. and D.P.H. of the University of Liverpool, where he had a distinguished career as a medical student, winning the Roger Lyon Jones Senior Scholarship. He has held many resident appointments at the Liverpool Royal Infirmary.

May 6th.

BRISTOL AND WESTERN COUNTIES.

(FROM OUR OWN CORRESPONDENTS.)

University of Bristol.

Dr. Gerothwohl, the member of the teaching staff whose letters to the press have been noticed in this column, has addressed yet another to the University council, a copy of which has been sent to the daily papers. It is rather long, but the gist of it is that he claims the right of appearing before the council to defend himself prior to the motion of dismissal from the staff taking effect. To this the council have replied inviting his attendance at their next meeting to state his grievance. Meanwhile a demand for an inquiry into the management of the University has come from a more weighty quarter. Dr. T. R. Glover has resigned his seat as representative of Cambridge University on the Court of the University of Bristol in order to bring the matter to a head. Dr. Glover's father is a prominent minister in Bristol, and his own knowledge of academic as well as of local affairs lends weight to his plea for an inquiry. He explains in a letter to the press that he takes no sides in the present dispute, but that he feels that matters cannot settle down until the air has been thoroughly cleared by an exhaustive and impartial inquiry.

Open-air School for Bristol.

The project for the establishment of an open-air school in Bristol for the tuberculous and ill-nourished children of the council schools was explained in detail at a recent meeting of the Civic League. The initial outlay is very largely covered by the generosity of Lady Greville Smyth, who has leased a site at a nominal rent, and by Mr. and Mrs. H. H. Wills, who are giving a sum towards the expense of building, which will amount to over £1000. A grant of £250 has also been promised by the Bristol antituberculosis committee. It is expected that the annual expenditure will amount to about £900. This will be raised mainly by voluntary subscription, though Government grants are expected to amount to £200, and parents will be asked to contribute towards the cost of food. In Bristol there are at present 120 children excluded from school on account of tuberculosis, and there are also several hundred suffering from anæmia and malnutrition. It is expected that the school will accommodate 50 children at a time, so that 100 or 150 children will pass through the school in the course of a year. Suitable clothing and food will be provided for those in need. Alderman E. H. Cook, speaking on behalf of the education committee, said that the experiment would be watched with interest by the public authorities who, however, would abstain from financial responsibility for the present.

Bristol City Lunatic Asylum.

The annual report of the visiting committee of the Bristol City Lunatic Asylum, which has just been issued, states that on Dec. 31st, 1912, there were 961 patients in the institution—viz., 456 men and 505 women. Of these, 855 were chargeable to the Bristol union, 3 to out-county unions, 29 were private patients, and 74 were boarded from other asylums. The highest number resident at one time in the institution was 988. During the year 70 patients were discharged on recovery. The committee express satisfaction as to the care and treatment of the patients and their entire approval of the able manner in which the medical superintendent and staff have performed their duties.

The Insurance Act at Plymouth and Exeter.

The amount paid in fees to the 39 medical men on the Plymouth panel was £2294. The largest amount received by one medical practitioner was £291. In two or three instances the fees received amounted to only a few shillings. Forty chemists received £396, the highest individual account being £68. At the last meeting of the Exeter Insurance Committee it was reported that the subcommittee had recommended that in future no medical man on the panel should have more than 3000 on his list. It was stated that during the past three months 10,099 prescriptions had been given by the medical practitioners on the panel, the chemists account for these being £278 16*s*.

The Sewerage Works of the Bath Rural District Council.

A Local Government Board inquiry was held at Bath on May 1st into an application made by the Bath rural district council for sanction to borrow £17,000 for sewerage works in the parishes of Batheaston, Bathford, Bathampton, Claverton, Monkton Combe, and Swainswick.

Royal Mineral Water Hospital, Bath.

The annual meeting of subscribers to the Royal Mineral Water Hospital, Bath, was held on May 1st. The annual report stated that the number of patients admitted during 1912 was 152 less than in 1911. The financial statement showed that the ordinary income amounted to £5281, and the ordinary expenditure was £5663, showing a deficiency of £382.

The Teeth of Devon School Children.

At a meeting of the Devon education committee on May 1st Dr. E. J. Slade-King referred to the terrible condition of the teeth in the working classes, and said that in the Barnstaple district 140 out of 508 children examined had defective teeth. In the ensuing discussion the county medical officer of health remarked that the only remedy was to employ a whole-time dental surgeon. A resolution was carried that steps should be taken to improve the condition of school children's teeth.

The Health of Teignmouth.

The medical officer of health of Teignmouth, Dr. F. C. H. Piggott, in his annual report for 1912 states that the death-rate for the year was 11·97 per 1000. This is the lowest on record for the town, the rate for 1911 being 13·56. The zymotic death-rate was 0·11, also the lowest recorded, and only 12 cases of notifiable disease occurred in 1912. Dr. Piggott adds that of the 137 children born during the year only 69 have been vaccinated.

May 6th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

Housing and the Death-rate in Glasgow.

AT a meeting of the Royal Philosophical Society of Glasgow held last week, Dr. A. K. Chalmers, medical officer of health of Glasgow, read a paper entitled "Housing as a Factor in the Death-rate; Inquiry on the Basis of the 1911 Census." He said that the influence of the house on the health of its inmates had been frequently discussed in relation to surface density and to the cubic space within the dwelling. He would consider the question from the point of view of the age of its inhabitants. A scrutiny of the age distribution based on the Glasgow Census of 1911 suggested that a very considerable portion of the difference in the death-rate could be ascribed to the larger proportion of children in the smaller houses. While 11 per cent. of the total population were children under five years, they found almost 19 per cent. in one-apartment houses, almost 14 per cent. in two apartments, as against 7 per cent. in three apartments and 4 per cent. in four apartments. Dr. Chalmers

referred to a number of features of the analysis he had made in regard to the relationship between house-room and death-rate, and in summarising the results of his inquiry he asked whether the several groups of population under consideration could be regarded as permanent sections of a population. He thought the death-rates which prevailed among them forbade that assumption. They were too low, and were not the rates of a stationary population, but suggested rather an ebb and flow of families caught in successive waves of good or evil fortune. That interchange was actually taking place to a recognisable extent in the case of the one-apartment population and the Poor-law. To what extent it was also in progress between the occupants of three and four apartments and upwards there were no present means of determining. That it did occur was evident from the low range of death-rates which the larger-sized houses presented. It might be urged that selective forces were in operation determining the movement of the population in the direction of one size of house, and that these rather than the surroundings in which they were recognised were the determining factors for the death-rate in certain diseases of digestion and of the nervous system. It was otherwise with regard to infectious diseases. Here the house element predominated, for in one-apartment houses the death-rates from the principal infectious diseases of childhood and from pneumonia at the ages 1–5 were 16 and 6, 12 and 6 for two-apartment houses, but only 7 and 2 for three-apartment houses, and 3 and 1 for four apartments and upwards. Before reaching these ages, however, the children born in the smaller houses displayed evidence of a serious physical handicap, which was related to some extent to the food-supply. The handicap was not extinguished by the high rate from prematurity, but might be traced in the disorders of digestion associated with low innervation, and in the diseases of early life associated with an unstable nervous system. In later life the influence of the birth surroundings did not wholly disappear, but these were obscured by the influences of adult life, which, as in the case of diseases of the nervous system, tended to become degenerative in type, and appeared more frequently among the occupants of houses of larger size. In conclusion, Dr. Chalmers pointed out that the analysis he had submitted might serve to emphasise the need for carrying an inquiry beyond the falling death-rate at all ages to a discrimination of the age-periods at which it principally occurred. It might incidentally also serve to suggest that the whole economic condition of the poor among the population and not their housing only was a subject of national importance.

Aberdeen and the National Insurance Act.

There are still about 5000 insured persons who have not chosen their doctor. It is understood that the medical sub-committee has decided that these shall be allocated amongst panel doctors having not more than 1500 on their lists.

Presentation to a Montrose Practitioner.

On the occasion of his leaving Montrose to take up practice in Aberdeen Dr. Middleton Connon was presented with a silver salver and a surgical cabinet. The presentation took place in Montrose council chamber before a large company, Provost Thomson being in the chair. Dr. Connon has been in practice for 14 years in Montrose. In making the presentation Provost Thomson said that it would not do to let such a good official and good friend of the community leave the district without expressing in some tangible way their appreciation of his services. Their good wishes would follow him in his new sphere of duty and influence in Aberdeen. Dr. Connon suitably replied.

Militiamen and Measles.

At a general meeting of the county council of Inverness-shire held in Inverness last week, Dr. J. Macdonald, medical officer of health, in submitting his report drew attention to the fact that Dr. Murdo T. Mackenzie, of North Uist, in his report had stated that disbanded Militiamen had brought measles to Grenitote, Sollers, and Beleshare. Considering the serious loss occasioned almost annually by school closures and in the other ways through the introduction of these diseases by the men attending the Militia training, he strongly urged that when any epidemic occurred in camp the men should be kept in quarantine long enough to make it certain beyond a possibility of doubt that none of them would be carriers of infection. Dr. Macdonald said the same complaint was made in Ross-shire as to men coming back from camp and developing measles. Some representation should be made to the War Office on the matter.

Kingseat Asylum Annual Report.

Dr. H. de M. Alexander, medical superintendent of Kingseat Asylum, in his annual report states that on Dec. 31st, 1912, there were 460 patients on the register, the same number as the previous year. 576 were under treatment, an increase of 16 as compared with the previous year. The admissions numbered 52 men and 64 women. Of these, 39 men and 49 women were certified as insane for the first time, and 28 had suffered from one or more previous attacks. Of those admitted, 38 were curable, 59 were absolutely incurable, and in 19 the prospect of recovery was doubtful. The discharges during the year numbered 64. The percentage of recoveries on the admissions was 37·9—which was higher than last year. The majority of patients discharged as recovered suffered from melancholia. One man had recovered who had been insane for 15 years. He had been transferred from another mental hospital, where he had been resident for 10 years. He was now in steady employment. The deaths numbered 52—24 men and 28 women, a large increase on the previous year. Eighteen of the patients who died were over 70 years of age. The cost of maintenance of each patient was £26 7*s.* 6*d.*, compared with £26 12*s.* 3*d.* for the previous year. The staff was now under the provisions of the National Health Insurance Act, and the board had resolved that in case of sickness the salary—less the sum allowed by the Act for sick benefit—should be paid for a period of two months. Reasons were given for the proposed extension of the asylum, which had been recommended by the Commissioners in Lunacy for some years.

May 6th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Royal College of Surgeons in Ireland.

Mr. J. B. Story, senior surgeon to the Royal Victoria Eye and Ear Hospital, Dublin, has been elected to the vacant seat on the Council of the Royal College of Surgeons in Ireland. The five other candidates were Mr. Coady, Colonel F. G. Adye-Curran, A.M.S. (retired), Mr. G. M. Fox, Mr. H. B. Goulding, and Mr. T. O'C. Redmond. Mr. Story was for many years on the Council of the College, but retired last year on becoming a candidate for the vice-presidency. He has recently been nominated as president of the Irish Medical Association.

Interference with a Medical Officer of Health.

At the last meeting of the Kingstown urban council a resolution was carried directing the medical officer of health when reporting a dwelling unfit for occupation to say whether he knew of any better dwelling to which the tenant could remove. One gentleman, supporting the resolution, declared that it was necessary "to limit the power of the medical officer." The intention of the council is, as far as can be judged, to conceal from themselves the insanitary condition of their district and from the public the need for further provision of housing.

Death of Dr. Robert Browne, of Rathgar.

The death of Dr. Robert Browne, of Rathgar, Dublin, occurred very unexpectedly last week. Few knew that he had suffered from heart disease for some years, and as he was going about until within two days of his death the news gave a shock to his many friends. Dr. Browne graduated as M.B. at Trinity College in 1868, and became a Fellow of the Royal College of Surgeons in Ireland in 1876. For many years past he was medical officer of health of the township of Rathmines and Rathgar, the most important suburb of Dublin. He was a painstaking officer and a man of high character and ability.

The Late Dr. J. E. Simpson.

In the Common Hall of the Royal Belfast Academical Institution on April 28th a memorial brass, erected by the Old Instonians Association in memory of the late Mr. Thomas Andrews, jun., and Dr. J. E. Simpson, who lost their lives in the *Titanic* disaster on April 14th, 1912, was unveiled in the presence of a large and representative gathering.

Sir John Byers, speaking on behalf of the medical profession, said that Dr. Simpson, an old college student of his, by his heroic conduct had maintained through the greatest of sea tragedies the very highest traditions of the medical profession and of the human race. He quoted from a letter written by the second officer of the *Titanic*, the last person to speak to Dr. Simpson and Dr. W. F. N. O'Loughlin, the chief surgeon of the White Star Line.

The National Insurance Act.

The much-talked-of conference between the Treasury Commission appointed to inquire into the question of the extension of medical benefits to Ireland, representatives of the Approved and Friendly Societies, and members of the medical profession from the six county boroughs in Ireland, took place in London on April 30th, but ended in no agreement. The Commission offered 9*s.* per insured person, exclusive of drugs, but to include attendance on the dependents. If this offer was not accepted the Commission threatened to recommend the establishment of a whole-time medical service, the administration thereof to be vested in the Irish Insurance Commission, who would have to organise such a service in detail. At this conference the medical men absolutely refused the 9*s.* offer for insured persons and their dependents, but they agreed to place the matter before the medical practitioners of each of the six county boroughs. At a largely attended meeting of the medical practitioners of co. Tyrone on May 1st it was stated that only 11 doctors in the county had agreed to act on the insurance panel, and of these six had already withdrawn and two more would withdraw, so that only three doctors remained on the panel. A resolution was carried refusing to go on the panel, and declining to grant certificates on the terms recommended by the Insurance Commissioners. It was stated that laymen and clergymen were traversing the country examining patients and giving them sick benefits without any medical certificate. The chairman, Dr. E. C. Thompson, of Omagh, pointed out that if societies granted benefits without medical certificates they ran the risk of becoming bankrupt.

May 6th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A Prize for Ophthalmology.

AN anonymous donor has given 5000 francs for a prize to be awarded in 1914 for the best work on the etiology, prophylaxis, and treatment of those forms of iritis, iridocyclitis, or cyclitis, arising from causes other than syphilis. Only essays that have been communicated to a French or foreign ophthalmological society will be eligible. The award will be entrusted to three judges chosen from among the ophthalmologists of the chief Parisian ophthalmological institutions. The essays, which must be typewritten or printed in French, English, or German, must be received before August 15th, 1914, at the Bureau des Annales d'Oculistique, 26, Boulevard Raspail, Paris.

A Legacy for the Academy of Medicine.

The permanent secretary of the Academy of Medicine has been authorised to accept on behalf of the Academy a legacy made by Mlle. Morand, the proceeds to be distributed at the discretion of the Academy among the societies or institutions engaged in treating children suffering from or menaced by tuberculosis.

Nerve Suture in the Upper Limb.

On April 22nd M. Mignon communicated to the Academy of Medicine the results of certain cases of nerve suture in the upper limb. The suture was ineffective in some cases of recent wound, but succeeded in others in which the divided nerve had for a long time had its lower extremity atrophied. In two cases of suture of the radial nerve following on fracture of the humerus, that which had been performed under the least favourable conditions succeeded, while the other was a failure. The best result had been obtained in a suture of the radial nerve above the elbow, performed after a wound which involved the bone.

Town Planning from a Hygienic Standpoint.

In a very interesting work Dr. Gabalda points out how important it is that towns should make such provision that in their future expansion they may not only furnish the maximum of comfort and salubrity, but also maintain a certain harmony. Town planning is a new science. When the massing together of houses occurs, it produces the overcrowding that is the dominant characteristic of cities. The degree of this overcrowding in a given city may be determined by estimating the density of its population. For instance, Paris in 1909 covered an area of 7936 hectares, with a population of 2,722,731, thus showing a density of 343 inhabitants to the hectare. The mean density of the principal cities of the world is as follows: London, 158; Berlin, 334; Vienna, 115; New York, 60; St. Petersburg, 157; Madrid, 157; Rome, 93; Buenos Aires, 66; Tokio, 139; Brussels, 184; Chicago, 38. If the increase in the great cities is more closely scrutinised, its progressive rise, especially since the beginning of the last century, is noticeable. In Paris the increase in the decade 1886–1896 was 7·1 per cent. During the same period it was in Berlin 37 per cent.; London, 18; St. Petersburg, 15; New York, 33; and Chicago, 106·5 per cent. The increase is especially marked in German towns. In a third of a century the population of Berlin has increased by 1,214,000 inhabitants, or at the rate of 146 per cent. No other capital shows so rapid an increase.

Heliotherapy in Surgical Therapeutics.

At the recent Congress on Gynæcology, Obstetrics, and Pædiatry M. Doche opened the discussion on this important subject by praising highly the treatment of tuberculous arthritis by means of immobilisation and heliotherapy. M. Verdelet supported him in this view, claiming credit for a part of the result for the climate of Arcachon. M. Vidal said that at the dispensary of the Union des Femmes de France at Algiers tumor albus had long been treated by exposure to the sun's rays. The sittings at first lasted only for five minutes, but finally reached eight or even nine hours. M. Déléarde said that exposure to the sun's rays gave excellent results in the rachitic and in tuberculous adenitis, results superior to those of opotherapy. M. Froelich noted with pleasure the return to the ancient therapeutic method which permitted the subjects of morbus coxæ to walk, thus avoiding their confinement in quarters closed to the sun's rays. In any case, the important matter was to keep the patients as much as possible out of doors. M. Menciére rightly remarked that the danger in medicine was the application of a particular therapeutic method to each individual case. They must not pin their entire faith on heliotherapy. It was a good adjuvant, but too much must not be demanded from it. M. Gaudier supported M. Menciére, and thought that while there was much good in heliotherapy the tendency to exaggeration must be avoided.

The Water Question at the Faculty of Medicine.

Many fatal cases of typhoid fever have made their appearance in the quarter in which the Faculty of Medicine is situated. After a diligent search for the cause it was found that these cases were due to the absorption of the water of the Seine in place of the city water-supply gathered from the watersheds. This was brought about as follows. At the Congress of Hygiene, recently held at this Faculty, various works were carried out, and water from the Seine was carried into pipes communicating with the water-supply from the watersheds. A high official of the Faculty of Medicine has declared that the Faculty is not responsible for the serious error which has given rise to the typhoid fever epidemic now raging, but that on the contrary, the Faculty was its first victim. The Faculty, he said, according to its contracts with the city, of which it is a ratepayer, ought to receive only potable water. The water used in the laboratories, in the practical schools, and in the living rooms ought to be water from the main, and it was paid for as such. During the establishment of the exhibition of sports annexed to the Congress of Hygiene and Physical Education, the Faculty of Medicine had deemed it a prudent precaution to increase the water pressure for the fire service by simply opening the stopcock of a pipe connecting with the water-supply from the main No other communication or adjustment was made, but the pipes thus opened, in place of supplying water from the main furnished water from the Seine. This water, however, was paid for as purified water. The Faculty of Medicine was thus the first victim of the error, if it was not a fraud, committed by the city, for a part of the *personnel* of the Faculty had been very seriously

affected. On the other hand, the Prefect of the Seine replies that the assertions of the Faculty of Medicine are inaccurate. According to them, this establishment should receive only the purified water, whereas there is in existence a petition from the Dean of the Faculty, dated 1891, asking for the establishment of a fire supply of river water, and the order establishing this supply gratuitously is also in existence. This was in addition to the separate water-supply from the main for the fire service. The unfortunate confusion was produced by admitting into the city water-pipes river water from the fire service, the stopcocks of which, in order to prevent any such admixture, were sealed up and ought not to have been unsealed except in the presence of an official from the Prefecture of the Seine. This precaution had not been complied with, notwithstanding that the Faculty of Medicine was in possession of an order from the Prefecture specifically forbidding it, on its own responsibility, to break the protecting seals of the stopcocks, save in case of fire, and no such fire had taken place.

May 5th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

A National Museum of Hygiene.

THE great success of the International Exhibition of Hygiene held in Dresden in 1911 has led to the suggestion that a permanent museum of hygiene should be established in that city. The exhibition was a great public attraction, patronised by an immense number of visitors, and will form the nucleus of the new institution. After lengthy negotiations this project of the museum will soon be realised. The city of Dresden has given a site for the building in the neighbourhood of the Botanical Garden, and in addition will grant 150,000 marks (£7500) annually for completing the collections. The Kingdom of Saxony, of which Dresden is the capital, will give 2,000,000 marks (£100,000) for building expenses. The German Empire will also give a sum for the same purpose if the consent of Parliament can be obtained. A society has, moreover, been formed with the object of collecting money for the support of the institution. The museum is expected to serve the purpose of instructing the population with respect to the several parts and functions of the body, as well as with respect to conditions which are dangerous to health and the means of avoiding those dangers. In this way the basis of an adequate comprehension of rational hygiene will be laid. It is further said in the programme that in the event of the projected university being ultimately established in Dresden the museum will be used for the training of the students in hygiene.

The Anti-alcohol Movement.

The scientific committee of the Anti-alcohol Association held its annual meeting in Berlin recently. Dr. Schmidt, a jurist, reported that the new criminal Bill will not admit alcoholism as an extenuating circumstance in connexion with the commission of offences, and that important provisions will be introduced dealing with criminal inebriates. Dr. Hartwig, director of the statistical office in Lübeck, read a paper in which he stated that in the year 1910 in Germany 2100 millions of marks were expended in beer, 127 millions in spirits, and 378 millions in wine, so that taking an average 40·74 marks were spent annually on these beverages by every member of the population. Each year 30,000 people were sent to asylums for alcoholism, and about 1500 died from delirium of alcoholic origin. About 10 per cent. of suicides were due to alcoholism, and about 10 per cent. of criminal offences were committed by persons in a state of intoxication. In the year 1910 it was necessary to place 10,590 persons under guardianship for inebriety. In 700 cases divorce was obtained for that reason. Dr. Weymann spoke on the damage done by alcohol to intellectual culture. He explained that habitual drinking, which was so much on the increase among young men of the educated classes, encouraged receptive mental activity and uncritical appropriation of foreign thought, destroying at once the ability and the inclination to think independently. Alcohol favoured a tendency to æsthetic and sentimental contemplation of the world instead of a moral and practical one; it led to a lowering of the sense of social and political duty, and in the sphere of the will it diminished the power of self-control and the faculty of carrying well-considered schemes into practical effect. Professor Aschaffenburg, of Cologne, discussed the influence of spirit-drinking on mental activity. He said that it impaired the perceptive faculty; the function of the will seemed to be quickened, but was less reliable, and the person's thoughts became superficial and incoherent. The Rev. Mr. Stubbe, of Kiel, gave a report on the progress of the anti-alcohol movement during the past ten years. Dr. Leonhart, a town councillor of Kiel, spoke in favour of a legal licence for the sale of beer in bottles, which hitherto has been a free trade without control. He recommended that temperance bars should be established in public places, and that the Gothenburg system should be favourably looked upon by municipal authorities.

The Congress of the German Roentgen Association.

The annual Congress of the German Roentgen Association was held in Berlin on March 29th and 30th, Dr. Immelmann, of Berlin, being in the chair. Dr. Wolff, of Berlin, spoke of the value of radiography in connexion with artificial pneumothorax, since it enabled the surgeon to exercise a control over the quantity of air to be introduced. Dr. Grödel, of Frankfort, showed a Roentgen cinematograph apparatus by which ten and more photographs of the heart could be taken in a second of time. Dr. Buky, of Berlin, showed a system of screens for interposition between the body and the photographic plate for the purpose of eliminating the secondary rays issuing from the body. Dr. Haudek, of Vienna, showed Roentgen photographs of cases of gastric ulcer. In these photographs indentations of the margin of the great curvature were visible, and when an operation was performed adhesions in the neighbourhood of the stomach were found. Dr. von Bergmann, of Altona, described certain alterations of the motility and the form of the stomach caused by different medical compounds; he said that atropine decreased the tonicity of the stomach and that pilocarpine increased it. Dr. Sabat, of Lemberg, said that he had found by experiments on dogs that morphine altered the form of the stomach and delayed the evacuation of its contents. Dr. Baum, of Berlin, and Dr. Gottschalk, of Stuttgart, reported that they had seen good results in the treatment of acne by Roentgen rays. Dr. Rosenblatt showed the kidneys and the ureters of a patient who had died after an injection of collargol. Dr. Schütze said that he had found in the pelvic region a shadow apparently caused by the deposition of iodine within the vagina. Dr. Grässner, of Cologne, spoke on the importance of Roentgen photography for examining patients who had met with accidents and required certificates stating their condition. He showed radiograms of muscles and ligaments in which ossification had developed as a sequel of an accident. Dr. Grashey, of Munich, spoke on senile alteration in the bones, which might easily be confounded with inflammatory processes or with the sequelæ of accidents. They resembled atrophy of cartilages or ossification of soft tissue in senile persons. Dr. Thost, of Hamburg, showed Roentgen photographs of cancer, tuberculosis, and perichondritis of the larynx. He said that Roentgen examination was always necessary when laryngoscopy had proved negative, and in nervous troubles which were caused by alterations resembling arthritis deformans. Dr. Bangert and Dr. Utecht, of Berlin, Dr. Walter and Dr. Lorey, of Hamburg, and Dr. Dessauer, of Frankfort, read papers on Improvements in the Use and Application of the Roentgen Rays. Professor Levy-Dorn was elected President of the next Congress.

May 3rd.

UNITED STATES OF AMERICA.

(FROM OUR OWN CORRESPONDENTS.)

Fiftieth Anniversary of the National Academy of Sciences.

THE fiftieth anniversary of the National Academy of Sciences was celebrated at Washington on April 22nd and two following days by a gathering of scientific men from Europe and all parts of the United States. Addresses were delivered by Professor Ira Remsen, of Johns Hopkins University; President Arthur Hadley, of Yale University; and Professor Arthur Schuster, secretary of the Royal Society. Professor William H. Welch was elected president of the society, Professor Charles D. Wallcott, secretary of

the Smithsonian Institute, vice-president, and Professor Arthur L. Day, of the Carnegie Institution, secretary.

Model Marriage Laws for the United States.

According to the New York *Evening Post* marriage regulations to serve as a model for all the States are to be framed by the Board of Trade of the United States at its regular meeting in Washington on May 9th. Congress is to be petitioned to enact these laws and to grant additional powers to the Health Department of the District of Columbia for their enforcement. Committees of organisation have been at work for some time in framing the regulations. One provision will compel applicants for marriage licences to exhibit a medical certificate as to their good health. Congress will also be asked to create a Commission on Vice, to increase the powers of and add to the dispensaries and laboratories of the Health Department, and to inaugurate a general and widespread campaign of education in sex hygiene.

Smoke in Chicago.

London, Glasgow, Manchester, Leeds, and the other big manufacturing towns of Great Britain are not the only towns which suffer badly from the smoke evil. Pittsburgh is probably the smokiest city in the United States, but Chicago is not far behind in this respect. The city's annual loss from this cause is estimated at more than $18,000,000.

The American Proctologic Society.

The fifteenth annual meeting of the American Proctologic Society will be held at Minneapolis, Minnesota, on June 16th and 17th. The President is Dr. Louis J. Hirschmann, of Detroit, and the secretary-treasurer Dr. Lewis H. Adler, jun., of Philadelphia. Among the 20 papers announced, all of them promising to be of interest, Dr. Samuel T. Earle, of Baltimore, will give a review of the Proctologic Literature for 1912; Dr. Rollin H. Barnes, of St. Louis, will describe a Method of Operating on Fistula without Cutting Muscular Tissue; the veteran proctologist, Dr. Joseph M. Mathews, of Louisville, will give his personal reminiscences on the subject; Dr. J. Coles Brick, of Philadelphia, will describe Ano-rectal Fibrosis, "A New Disease"; and Dr. Dwight H. Murray, of Syracuse, will continue his Observations on the Treatment of Pruritus Ani by Autogenous Vaccines.

April 28th.

NOTES FROM INDIA.

(FROM OUR OWN CORRESPONDENTS.)

Bombay Malarial Survey.

THE Bombay Sanitary Board has recommended a malarial survey of the whole Presidency, for until such a survey has been made no definite information will be forthcoming as to the actual and relative prevalence of malaria in different areas. The work is expected to extend over five years, and is to be carried out by two field parties at an estimated annual cost of Rs.35,000. Government has accepted the board's recommendations. Operations will be begun in Sind and the Kanara districts.

Salvation Army Home.

The Salvation Army in Simla, having been requested to start a nursing and convalescent home at moderate charges to which medical practitioners could send their patients, Portmore, a most suitable property, has been purchased and fitted up. The upper flat will form a nursing home for ladies at moderate charges. An English nurse with C.M.B. qualifications in midwifery is in charge and patients will be free to choose their own medical attendants. The lower flat will constitute a comfortable home for convalescents and others to recuperate during the summer months. Though intended more especially for resting missionaries and workers, other visitors will be received at a charge of Rs.3 per day.

Treatment of Lepers.

The Government of Madras have decided to apply the provisions of the Leper Act of 1898 throughout the Presidency, and have asked the surgeon-general to submit proposals for the establishment of a leper asylum at Chingleput and to convene a conference of representatives of leper institutions in the Presidency to confer regarding arrangements for the immediate application of the Act.

Plague at Debai.

Owing to an outbreak of plague Debai has been declared an infected port. The plague regulations issued by the Government of Bengal will accordingly be enforced in the ports of Bihar and Orissa against vessels arriving from Debai.

The Retiring Director of the Central Research Institute.

Few men of the time have deserved more honoured recognition from the people of India than Sir David Semple, head of the Research Institute at Kasauli, whose retirement has just been announced. He has had a distinguished career for 13 years in India, and the work that he has done, both as founder and head of the Pasteur Institute and as director of the Central Research Institute at Kasauli, is of permanent value. After a training under Sir Almroth Wright and a special course at the Pasteur Institute in Paris, Major Semple came out to this country in 1899. Naturally he turned his attention to rabies, for at that time any person bitten by a mad dog in India had to travel to Paris for antirabic treatment. In April, 1900, he was appointed head of the new Pasteur Institute at Kasauli, and in the following August it was opened to patients. Its progress has been rapid and continuous, and despite the creation of a similar institution in Southern India over 3500 patients are now treated yearly at Kasauli. With the late Major Lamb, I.M.S., Major Semple developed the production of antisera, particularly antivenin and antidiphtheritic sera. Subsequently, the Government of India, in May, 1909, resolved to start a special institute to carry on research into the endemic and epidemic diseases of India, and Major Semple was naturally chosen as head of the new institute. Each year the scope and usefulness of this Central Research Institute have been extended. Amongst the important functions of the institute is its educational aspect, and many officers of the Indian Medical Service owe to Sir David Semple's teaching that knowledge of bacteriology now so necessary even for the general practitioner. Special mention must be made of the discovery which, by rendering unnecessary the creation of new Pasteur institutes, enables the treatment to be administered at any convenient centre. While he was still head of the Pasteur Institute the Government bestowed upon Major Semple the gold Kaisar-i-Hind medal, and in 1911 this was followed by a richly deserved knighthood. Sir David Semple leaves India at a comparatively early age, but he has already placed this country under a lasting obligation.

The Indian Famine Trust.

The report of the Indian Peoples' Famine Trust for the year 1912 shows 1½ lakhs given for the relief of famine in Gujerat, Cutch, and Kathiawar, but of this Rs.14,000 were refunded. The endowment fund stands at Rs.2,810,000, as in 1911, while the accumulations of interest are 6½ lakhs, which are available for expenditure.

Scottish Medical Mission.

The fine medical work of the Church of Scotland Mission at Jalalpur deserves commendation. In its first year, 1899, it attended to 51 in-door and 23,267 out-door patients. In 1912 there were 1785 in-patients and 42,800 out-patients, most of whom came from within a radius of 60 to 70 miles frem Jalalpur. The ophthalmic operations during the year were 1585, of which the extraction of cataract accounted for 734. The balance-sheet shows that the local income considerably exceeds that received from home, and the mission has repaid to the Foreign Missionary Committee a sum greater than it has received. Fees, even though merely nominal ones, are charged to in-patients, and the drugs supplied to out-patients are often charged for, since what is obtained for nothing is lightly valued.

April 11th.

CHILDREN'S CONVALESCENT HOME, WESTON-SUPER-MARE.—The annual report of this institution states that during the year 1912 there were 313 admissions, 243 of which were Bristol children, the Bristol Children's Hospital sending 109. The average stay was 21 days. The subscription list showed a small decline, but sums of £50 and £42 were received from the Bristol schools and from the working men of Bristol respectively.

THE NATIONAL INSURANCE ACT.

MEDICAL CERTIFICATES UNDER THE NATIONAL INSURANCE ACT AND A FRIENDLY SOCIETY.

THE case of Heard *v.* Pickthorne and others, being an action against the officials of the Court Abbey Foresters, a branch of the Ancient Order of Foresters Friendly Society, involved a very important point of law affecting the medical profession and their patients, and was brought to a conclusion when first heard in the High Court by a decision of Mr. Justice Bailhache,[1] which has now been reversed by the Court of Appeal. The action was begun by a member of the society mentioned in order to obtain a declaration by the court that a resolution passed by the society was illegal, *ultra vires*, and unenforcible. The resolution in question was to the effect that sickness benefit under the National Insurance Act should not be paid except upon a certificate of the incapacity of the sick person signed by a medical practitioner upon the panel. The effect that this would have is obvious. The resolution being acted upon by the officers of the society as if it were a rule would prevent any member who might choose to employ a medical man not upon the panel from drawing sickness benefit, unless he were to go, for the purpose of procuring a certificate, to a member of the panel. It would tend to remove patients anxious to employ them from medical men not upon the panel and to transfer such patients to medical practitioners upon it. It would mean that the domestic servant of a medical practitioner, however eminent, might be treated by his employer and might find that employer's certificate as to the cause of his illness useless for the purpose of obtaining the sickness benefit which probably in the imagined circumstances would constitute the only benefit that would be sought for. When, however, the action was brought before Mr. Justice Bailhache to test the legality of the resolution described, the defendants successfully pleaded that under Section 67 of the National Insurance Act the matter was not one for the courts to decide, but that under that section it should be brought to arbitration, followed, if it were thought desirable by the losing party, by appeal to the Insurance Commissioners. The material parts of Section 67 provide that "every dispute between an Approved Society or a branch thereof and an insured person who is a member of such society or branch, or any person claiming through him, relating to anything done or omitted by such person, society, or branch (as the case may be) under this part of the Act, or any regulation made thereunder, shall be decided in accordance with the rules of the society, but any party to such dispute may, in such cases and in such manner as may be prescribed, appeal from such decision to the Insurance Commissioners." This section follows the line adopted in Section 68 of the Friendly Societies Act, 1896, with the exception that the right of appeal to the Commissioners is added, and consequently there have been legal decisions as to its meaning. Mr. Justice Bailhache, after hearing argument, held that the resolution was not such a curtailment of the plaintiff's legal rights as would justify the intervention of the court, and that the case was a proper one for decision by arbitration under the rules of the society and under Section 67, cited above.

In the Court of Appeal it was argued on behalf of the plaintiff, the appellant, that the resolution was illegal, and that the illegality was of such a nature that the court could deal with it. It was pointed out that the rules of a Friendly Society and any amendments of them had to be registered with the Registrar of Friendly Societies, and that in a rule so registered by the Ancient Order of Foresters it was ordered that a member claiming sickness benefit should send to the secretary "a declaration of incapacity for work in the form required and a medical certificate or other sufficient evidence of incapacity and the cause thereof." This rule had also been approved by the Insurance Commissioners. The resolution purported to amend it, and had not been registered as a rule or approved by the Commissioners. It was argued that the member might bring forward any proof of sickness he chose, and that no doubt the society might reject it if it were insufficient, but that it could not impose beforehand a condition not contained in the Insurance Act. It was argued on behalf of the respondent society that the resolution was passed with the idea that it would prevent the possibility of payments being made which were not authorised by the Insurance Act and the rules made under it, that it was only an instruction to the officials who had charge of the society's funds and not a rule, that it was not *ultra vires*, and that any question arising with regard to it between an insured person and the society came within Section 67 of the Insurance Act and should go to arbitration.

Lord Justice Vaughan Williams, in giving judgment, adopted the view that the resolution must be regarded as a rule by which the society had said that the only proof they would accept as to incapacity for the purpose of distributing sickness benefit under the National Insurance Act was a certificate signed by a medical man on the panel. In his opinion they could not so limit the evidence they would accept, but were bound in each case to consider the evidence laid before them whether it came from a practitioner on the panel or not, or, indeed, they might consider any other evidence which sufficiently proved the illness of the applicant. An injunction could be granted against a Friendly Society exceeding its powers; but, on the other hand, there were questions of internal administration with regard to which an injunction was not the proper remedy, but recourse could and should be had to arbitration. In his opinion the society in the case before the court was interfering with the statutory rights of those entitled to benefit under the Act, and the court had not only the right but the duty to interfere. In conclusion, his lordship held the resolution to be illegal and *ultra vires*, and that the plaintiff was entitled to a declaration to that effect.

Lord Justice Hamilton and Mr. Justice Bray agreed, the former saying that the resolution, whether called a rule or not, was in the nature of a rule, and as such was *ultra vires* and unenforcible. It had the effect of taking away from the members of the Friendly Society in question rights which had been given to them by statute, and it had not been registered as a rule under the Friendly Societies Act or approved by the Insurance Commissioners. By its resolution the society sought to lay down, in order to protect their secretary and as a guide to their arbitration committee, the principle that in estimating the proof of sickness under the Insurance Act a certain class of evidence was to be excluded which was competent, qualified, unexceptionable, and material because it was formed upon direct knowledge of the facts. The appeal was accordingly dismissed with costs.

[1] THE LANCET, April 5th, 1913, p. 971.

SOMERSET INSURANCE COMMITTEE.

At the meeting of the Somerset Insurance Committee held at Bridgwater on May 3rd it was stated that in Somerset practically the whole of the medical practitioners were giving their services under the National Insurance Act. The number of insured persons in the county was 106,788, and about 18,000 have not yet selected their medical attendant. The total number of medical men on the permanent list was 261, and 259 were on the provisional list. The first quarter's payment "on account" to the medical practitioners was £6533, and there is a considerable balance still due. The 102 pharmacists "on the panel" had received 75 per cent. of their accounts, and this amounted to £602. In the first two months there had been about 33,000 prescriptions, at an average cost of about 6*d*. each. Under sanatorium benefit 173 recommendations had been made, 23 of these on behalf of children; 37 patients are at present in sanatoriums. So far six dispensaries have been opened, and others will be added shortly.

BRISTOL INSURANCE COMMITTEE.

At a meeting of the Bristol Insurance Committee held on May 5th it was reported that in Bristol there were 114,172 insured persons; of these, 93,305 had chosen their medical attendant, 8500 would probably be treated in medical institutions, and about 13,000 had not selected their doctor. One medical man had 3227 patients and another had only 7. Half the insured people were attended by 24 medical practitioners and the other half were divided amongst 95 medical men. The income of the medical practitioners would be as follows: 8 would receive £1130 to £720, 26 between £638 and £363, 27 from £343 to £175, and 58 less than £175.

A hope was expressed that some means of equalisation would be found. Under sanatorium benefit the total number of applications received to May 2nd was 1913. Of the applicants, 106 had been sent to sanatoriums; 28 had already returned improved, 12 were receiving domiciliary and 2 dispensary treatment, and 9 had died. Nearly 100,000 prescriptions had been received at an average cost of 7½*d*. A scale of fees for persons contracting out was approved: 2*s*. for surgery attendance, 2*s*. 6*d*. for visit to the patient's house, 3*s*. for special (i.e., Sunday or return) visits, 4*s*. for night visit, 10*s*. 6*d*. for surgical operation requiring an anæsthetic, 10*s*. 6*d*. for administration of general anæsthetic, and the same for setting a fracture or reducing a dislocation.

Medical News.

FOREIGN UNIVERSITY INTELLIGENCE.—*Cologne:* Dr. Bardenheuer is retiring from the chair of Surgery in the Academy of Practical Medicine and from the chief surgeoncy of the Municipal Hospital, to which institution he has given his valuable library.—*Frankfort:* Dr. J. Strasburger, of the Breslau Policlinic, has accepted the invitation to take charge of the new medical institute of the policlinic.—*Göttingen:* Dr. Otto Klienberger, of Königsberg, has been appointed senior physician to the University Clinic for Mental and Nervous Diseases.

CHEMISTS' EXHIBITION.—The Chemists' Exhibition, which was opened on Monday last at the Holland Park Skating Rink, London, W., provided an interesting scene for both the pharmacist and the ordinary visitor. There were some novel features introduced this year in the shape of working examples of machinery employed in the making of pills, powders, surgical wools, and other medical and pharmaceutical products. The accommodation for the stalls was generous, a fact which was very generally appreciated by the exhibitors. Altogether the exhibition proved to be an attractive, artistic, and instructive display. The occasion was the nineteenth in the series of exhibitions that have been held, which appear to receive an increasing patronage year by year.

MARGATE CHAMBER OF COMMERCE.—Margate may be congratulated upon possessing a thoroughly well organised body called the Chamber of Commerce, the members of which take an active share in promoting the general interests of the port and borough, and in suggesting developments and improvements with the view of increasing the attractions of this well-known health resort. The remarkable progress in Margate which has been made in development with an eye to the comfort and enjoyment of visitors has been largely due to this association. The Margate Chamber of Commerce was founded in 1899. Up to that time no particularly active steps were taken to keep the advantages of the place before the public, but it was soon felt that though Margate possessed a very valuable asset in the invigorating and curative properties of its air, it was necessary in order to ensure the increased prosperity of the town to keep these claims constantly in the foreground. Further, to keep pace with modern demands it was obvious that the accommodation for visitors needed extension and improvement, and it was realised also that visitors looked upon the provision of social attractions and amusements of a high-class description as a *sine quâ non*. The spirit in which these questions have been approached has developed a remarkable local interest in the welfare of the town; the visitor, for example, is no longer left to the mercies of itinerant bands or vulgar performances of a more or less improvised kind, but a well-regulated series of social amusements is provided under the control of the corporation, which receives important assistance in this matter from the Chamber of Commerce. The authorities are particularly proud of their new pavilion and winter garden situated on the Fort Cliff, the concert hall giving accommodation for 2500 people. The attention directed to the comfort of the visitor thus corresponds with the systematic methods adopted at continental health resorts. The Chamber of Commerce has also done excellent work in persuading the railway companies to accelerate their services to the town. It was interesting to hear of these facts in the speeches delivered on the occasion of the annual banquet of the Chamber of Commerce, which was held in the Tudor Hall of the Queen's Highcliffe Hotel, Margate, on May 2nd. Judging from the success which has followed the formation and work of this Chamber of Commerce at Margate, other health resorts in the country might do well to consider the desirability of possessing a similarly constituted body. The committee at Margate has, moreover, the advantage of including medical representatives among its members.

UNIVERSITY OF LONDON: KING'S COLLEGE.—A course of four lectures on the Physiology of Absorption, illustrated experimentally, will be given by Professor T. G. Brodie, F.R.S., at 4.30 P.M., on Wednesdays, May 28th and June 4th, 11th, and 18th. These lectures are free to all medical students in London medical schools, to all internal students of the University of London, and to medical men on presentation of their cards.

BRUSSELS MEDICAL GRADUATES' ASSOCIATION.—An annual dinner of this association in connexion with the forthcoming Congress in Paris of the Royal Institute of Public Health was held at the Trocadero Restaurant, London, on April 22nd. In the absence of the President, Dr. Arthur Haydon took the chair, and proposed the toast of "The Visitors." Dr. W. J. M. Ettles proposed the toast of "The Association," and Dr. James Metcalfe responded. The following officers were elected for the ensuing year:—President: Dr. Harold S. Sington. Vice-President: Dr. F. Howard Humphris. Honorary treasurer: Dr. Major Greenwood. Honorary secretary: Dr. Arthur Haydon.

ROYAL INSTITUTE OF PUBLIC HEALTH.—A reception was held on Tuesday evening, May 6th, at the Institute, 37, Russell-square, London, W.C. The visitors were received by the president, Earl Beauchamp, H.M. First Commissioner of Works, and Countess Beauchamp. Demonstrations were given during the evening in the laboratories and an interesting cinematograph exhibition was provided in the lecture room. The new museum on the ground floor, which has been generously equipped by Sir William H. Lever, Bart., was formally presented to the institute by the donor, and suitable acknowledgments were made by Lord Beauchamp and by Professor William R. Smith, principal of the institute.

UNIVERSITY OF LONDON: FACULTY OF MEDICINE.—At a meeting of the Faculty of Medicine held at the University of London on May 2nd, Sir Alfred Pearce Gould, Dean of the Faculty, in the chair, Mr. H. J. Waring, M.S., M.B., B.Sc., was appointed to represent the Faculty on the Senate for the period 1913–17. The constitution of the board of the Faculty was approved as follows: Sir Alfred Pearce Gould, Dean; Dr. Cecil Wall, secretary; Dr. W. P. Herringham, Professor Crossley, Dr. H. L. Eason, Sir Rickman Godlee, Sir Alfred Pearce Gould (also as chairman of the Board of Studies in Dentistry), Dr. Graham Little, Dr. Senter, Professor J. M. Thomson, Professor Waller, and Mr. H. J. Waring (being members of the Faculty who are also members of the Senate); Professor Womack, chairman of the Board of Preliminary Medical Studies; Professor Halliburton, chairman of the Board of the Intermediate Medical Studies; Sir Francis Champneys, chairman of the Board of Advanced Medical Studies; Professor Kenwood, chairman of the Board of Studies in Hygiene and Public Health; Dr. M. S. Pembrey, chairman of the Board of Studies in Physiology; Professor Wright, chairman of the Board of Studies in Human Anatomy and Morphology; Professor J. P. Hill and Mr. J. A. Gardner, nominated by the Board of Preliminary Medical Studies; Professor Parsons and another, nominated by the Board of Intermediate Medical Studies; Dr. H. D. Rolleston, Mr. Stanley Boyd, Dr. Herbert Tilley, and Mr. S. G. Shattock, nominated by the Board of Advanced Medical Studies. The following members appointed by the Faculty: Mr. Raymond Johnson, Mr. A. Macphail, Mrs. Scharlieb, Dr. T. W. Shore, Dr. T. G. Stevens, and Dr. H. H. Tooth. The sum of £100 for advanced lectures in the Faculty of Medicine was allocated in the proportion of £35 to the Board of Intermediate Medical Studies, and £65 to the Board of Advanced Medical Studies. The Faculty requested the Board of the Faculty to consider the position of the Faculty of Medicine in view of the publication of the report

of the Royal Commission on the University of London, and to present a report.

TORBAY HOSPITAL.—A sum of £350 has been subscribed for the purpose of erecting a new mortuary for the Torbay Hospital, Torquay.

THE ROYAL SOCIETY.—The first annual conversazione of the Royal Society was held at Burlington House on Wednesday. The exhibits, to some of which we hope to refer next week, were fewer in number than usual.

ROYAL INSTITUTION.—The annual meeting of the members of the Royal Institution was held on May 1st, Sir James Crichton-Browne, treasurer and vice-president, being in the chair. The annual report of the committee of visitors for the year 1912, testifying to the continued prosperity and efficient management of the institution, was read and adopted.

PRESENTATION TO A MEDICAL PRACTITIONER.—At the presentation of certificates to the members of the Totterdown (Bristol) branch of the St. John Ambulance Brigade, Dr. Joseph John Scammell Lucas was presented with a gold fountain pen as a slight mark of esteem and appreciation for his services as honorary instructor of the class.

DURHAM UNIVERSITY MEDICAL GRADUATES' ASSOCIATION.—A dinner of this association will be held at the Criterion Restaurant, Piccadilly-circus, London, W., on Friday, May 30th, at 7.30 o'clock, when Dr. F. W. Edridge-Green, the President, will take the chair. The honorary secretary for the south is Mr. Bryden Glendining, 7, Devonshire-place, London, W.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Medical Treatment of School Children in Scotland.

Mr. MCKINNON WOOD, the Secretary for Scotland, on April 30th introduced a Bill in the House of Commons "to enable the provision of medical treatment for children attending schools in Scotland." It was read a first time.

Inebriates Bill.

The Inebriates Bill, which is designed to consolidate and amend the law relating to inebriates, has been re-introduced in the House of Commons by Mr. ELLIS GRIFFITH. It was read a first time.

Asylum Officers' Superannuation Bill.

Sir JOHN JARDINE introduced in the House of Commons on Tuesday, May 6th, a Bill to amend the Asylum Officers' Superannuation Act, 1909. He explained that he was acting on behalf of the Asylum Workers' Association in bringing this matter forward. The term of service required before nurses and attendants in asylums could obtain a superannuation allowance was too long, considering the arduous conditions under which they worked. The Bill would permit women officials to receive superannuation before they reached the present age-limit if they had suffered in their health. It would reduce the superannuation age in the case of men by five years.

Select Committee on Patent Medicines.

It is understood that the Select Committee of the House of Commons which has been taking evidence on the subject of patent medicines for months will complete its public inquiries on May 29th. At its meeting on Thursday, May 1st, Dr. DOBBIE, the head of the department of Government chemists, reviewed some of the evidence which has been given to the committee.

Mental Deficiency and Lunacy (Scotland) Bill.

The promised Mental Deficiency and Lunacy (Scotland) Bill was introduced in the House of Commons on Wednesday, May 7th. It is under the charge of Mr. MCKINNON WOOD, the Secretary for Scotland. Owing to differences in administration in England and Scotland, a separate Bill has been necessary for the latter country. It will be sent to the Scottish Standing Committee for consideration.

HOUSE OF COMMONS.

WEDNESDAY, APRIL 30TH.

The Lists of London Panel Practitioners.

Mr. HUNT asked the Secretary to the Treasury whether his attention had been called to the fact that 106 of the London panel doctors had each from 2000 to 7000 patients on their lists; that, consequently, some of the patients could not get medical attendance and had to pay outside doctors as well as their insurance money; and what he intended to do to remedy this state of affairs.—Mr. MASTERMAN replied: I am informed by the London Insurance Committee that no doctor on the London panel has 7000 insured persons on his list. Some misapprehension has been caused by the fact that in some cases the doctor who is supposed to have a large number on his list is, in fact, the senior member of a partnership or firm the members of whom are collectively responsible for the treatment of those persons. The answer to the second part of the question is in the negative. If the insured person fails to obtain adequate medical attendance and treatment from the doctor whom he has selected the Insurance Committee, on having the case brought to their attention by himself or by the Approved Society or otherwise, will arrange for his transfer to another doctor.

Mr. HUNT: Is it not a fact that the doctors have at all events from 3000 to 5000 patients on their books? Does the right honourable gentleman consider that satisfactory, and is it possible for the patients to get proper medical attendance under these circumstances?—Mr. MASTERMAN: The doctors have on their books the patients who have chosen them. That is what we mean by the free choice of doctor. If they find they cannot get the attendance they want then they can be transferred to another doctor.

Insured Persons and Panel Service.

Mr. F. HALL (Dulwich) asked the Secretary to the Treasury how many insured persons had employed doctors not on the panel in order to ensure prompt and efficient attention; and whether the cost of medical attention so obtained or any proportionate part thereof was refunded.—Mr. MASTERMAN answered: As insured persons can obtain prompt and efficient attention from medical men on the panel there is no need for them to employ other medical men on this account, nor have I any evidence that this course is being taken. In any case of complaint of neglect the insured person should communicate with the Insurance Committee, whose duty it is to investigate the matter.

Mr. HALL: If an insured person is on a given doctor's panel and is unable to obtain the services of that doctor, will he in the event of being compelled to employ another medical attendant have a part of the expense thereby incurred allowed to him?—Mr. MASTERMAN: I am not sure whether the Committee have any power to allow expenses not already authorised.

Mr. HALL: Then the insured person would be paying twice for medical attendance?—Mr. MASTERMAN: I have no evidence that insured persons cannot obtain prompt and efficient attention from the doctors on the panel.

Motor Ambulances and Petrol Duty.

Dr. CHAPPLE asked the Chancellor of the Exchequer whether, in view of the fact that motor ambulance wagons by their greater speed and comfort greatly mitigated the suffering of those afflicted by sickness or accident who had to be conveyed to hospital, and of the fact that they were mostly maintained by voluntary contribution and free to sufferers, he would encourage the displacement of horse-drawn ambulance wagons by exempting from duty petrol used in accident transport services in Scotland.—Mr. LLOYD GEORGE replied: I am hoping to deal with this matter in the forthcoming Revenue Bill.

Small-pox at Newhaven.

In reply to Mr. SUTTON, Mr. BURNS wrote: An investigation has been made by one of the medical inspectors of the Local Government Board into the recent outbreak of small-pox at Newhaven, and it was found that the outbreak was due to infection from person to person. There is no evidence that it was caused by defective drainage arrangements or methods of sewage disposal. The nearest sewer outfall is stated to be a quarter of a mile from the infected houses. I am not aware of any proposal to carry the sewage further out to sea.

Administration of the National Insurance Act.

Colonel CHALONER moved: "That every effort should be made to bring the administration of Part I. of the National Insurance Act into harmony with the speeches made upon the subject by the Chancellor of the Exchequer and other Members of His Majesty's Government before the Act became law." He said that many individual instances had come under his notice where insured persons had not received the advantages and benefits under the National Insurance Act which had been held out by the Chancellor of the Exchequer and his supporters. In some cases which he cited insured persons had been unable to obtain free choice of doctor or satisfactory medical attendance.

Mr. GODFREY LOCKER-LAMPSON seconded, and drew attention to cases where medical men had from 5000 to 7000 insured persons on their lists in London.

Mr. DAWES, who spoke from personal acquaintance with the administration of the National Insurance Act in London, pointed out that in these cases where large numbers of patients were evidently attended by one medical man the fact was that the duty of attending them was undertaken by the doctor and his partners. That division of work made all the difference. It was, therefore, not the case that these medical men were attending excessive numbers of insured persons. As to sanatorium benefit in London, there were now 1425 persons under treatment. There were 557 cases in sanatoria, 113 cases in hospitals, 464 receiving domiciliary treatment, 267 receiving dispensary treatment, and 24 attending hospitals as out-patients. The Act was not unpopular in London, and considering the number of insured persons the complaints had been infinitesimal.

Mr. MASTERMAN, replying to the debate, said that it had been alleged that only the most obscure and least distinguished medical men were having anything to do with the Act, and that over the great bulk of the country there was no free choice of doctor because the insured persons, instead of being able to obtain the doctors they wanted, were being shepherded in five or seven thousands into the pens of inferior practitioners. But had those who said that any knowledge of the fact as to the doctors that were going on the panel? The medical men were so willing to continue work on the panel that they re-signed all their contracts this April which they originally made in January, and they had increased their numbers very considerably since January, and were increasing them every day. Practically now the only places in which any man was deprived of free choice of doctor (except in those cases of discretion of the Insurance Committee in individual instances) were one large town and three or four obscure villages, where the insured persons numbered 27,000 out of the 14,000,000 who were receiving medical attendance. The number of doctors on the panel on Jan. 15th was 17,796, and on April 14th 18,584, and he had no hesitation in saying that that represented something between 80 and 90 per

cent. of the doctors who were engaged in industrial practice. In such huge towns as Liverpool and Manchester over 80 per cent. of the practitioners were on the panel, practitioners who were attending not only rich people, but poor people as well. In a large number of the big towns and counties of England more than 100 per cent. of the doctors were on the panels (laughter). Honourable Members laughed. He must explain that. It meant that not only was every doctor in the town or district on the panel, but that the doctors in the immediate neighbourhood anxious to obtain practice in those towns were also on the panel. In Buckinghamshire, Derbyshire, Huntingdonshire, Blackburn, Bolton, Bootle, Devonport, Dudley, well over 100 per cent. of all the registered practitioners were serving under the ordinary system devised by the Act. Every individual in all those great towns had the freest choice. He could choose any single doctor of all the doctors who were registered. Considering that only three months ago the Friendly Societies and the Government together had to fight an organised movement of the medical profession, who desired that the Act should be destroyed and that not one single doctor should go on the panels, he thought that the House and all parties might well congratulate the administration on the present state of affairs. The next point he had to deal with was the allegation of overwork on the part of medical men. Excessive numbers of insured persons per panel doctor had been alleged, but in some of these cases at least the work had been undertaken not by an individual medical man, but by a medical partnership. Honourable Members must realise this fact when they used these numbers of persons to frighten people outside. There was no definite number that the Insurance Commission or the Committees or anybody in any country in the world had been able to fix as the number of insured persons to which doctors ought normally to be limited. He had found some very remarkable figures before the Act came into force when the question in such places as Swindon had been investigated. In Swindon an elaborate system existed for dealing with the railway workers and their wives and children. There was no complaint. It was an efficient service contributed to by the people as well as by the railway company. In that town the average number of persons for each doctor was over 5000. The system was working successfully, and so far as he knew there were no complaints of overwork. The statistics of the Friendly Societies showed that for every 1000 persons on a doctor's list under normal conditions the doctor would have to deal with eight cases in the surgery and four cases in visiting. That was a day's work. He did not want to see too large a number of insured persons per doctor. He thought it would be better if they were well distributed. He could not lay down a definite number, but he thought that if a man was allotted to a doctor who had 5000 persons on his list that ought to entitle him, if he wished it, to be transferred to another doctor. And when the patients made no complaint, and were apparently willing to receive the services which these doctors could give, he certainly should not say that a doctor would not be able adequately to deal with 2000, or 3000, or 4000 persons. Proceeding, the right honourable gentleman said that in 25 Insurance Committee areas the practitioners had on the average 500 or less insured persons, in 50 areas they had between 500 and 700, in 28 areas between 700 and 1000, in 12 areas between 1000 and 1200, and in only 5 areas had they 1200 and over. That showed the very large extent to which a general distribution of patients among doctors had been carried out automatically by the Act and the Regulations. Why in certain cases was there such a temporary heaping up of patients? It was because the poor had never received proper doctoring. They had never been able to pay for it. Good doctors who had gone to poor districts had never been able to make a decent living unless they took many more patients than they ought to have taken. But the result of the Act would be a very great increase of the number of medical men in the poorer districts. It had been pointed out how the London Insurance Committee had interpreted in the widest possible fashion, as he thought, the exceptional clauses of "contracting out," which were placed in the Act and had made arrangements which prevented some doctors from going on to the ordinary panels and joining the great mass of their fellow practitioners by allowing them to come on if they liked for a limited number of patients only. He believed every leader of the medical profession would agree with him when he stated that the worst possible thing that could happen as a result of this warfare, which he hoped was happily over, and which he believed was going to end in free and permanent amicable relationships between the medical men and the Insurance Committees—he stated it without fear of contradiction—would be to cleave that profession into halves, one on the panel and the other not, with competition and ostracism in every town between the one and the other, with poison in the mind of the insured person against a certain class of practitioners, with the unedifying process of recrimination which some months ago was carried on in the public press and which he hoped, and which the medical profession hoped, never would occur again. If the Government fought for one thing more than another, they fought for unity. They gave the medical profession in the Act what they asked them to give, and in doing so they incurred the enmity of a large section of the insured persons. They were always willing to meet the medical profession, and there was no bitterness over the fight in the minds of the Insurance Commissioners and the Insurance Committees in connexion with the medical profession. They had given them every opportunity to make every possible modification in connexion with the Insurance Act so long as the interests of the Approved Societies as a whole were preserved. The only reason why the choice of patients by any particular doctor had been refused was because the first obligation laid upon the Insurance Committees was to provide medical attendance for every insured person in their area, and it would be grotesquely unfair and the system would break down if a certain doctor in a small provincial town should be allowed to select a particular class of lives, not caring in the least degree what medical attendance there was for those he did not select. They might then have given a free choice to 30 or 40 persons and the Insurance Committee would be left with 200 or 300 with no ability to provide for them at all. On the contrary, he would boldly proclaim to-night that the action of the Chancellor of the Exchequer in the first place, and afterwards the administration of the Insurance Commissioners and the Insurance Committees, had been more than vindicated by the result. There was not the slightest reason why the few cases in which free choice of doctor had not been obtained—he doubted whether it was ¼ per cent. of the whole population of insured persons—should not be remedied also. Over 99½ per cent. were now obtaining what they desired and what they never had before the Act came into force, because before its passing scarcely half of the 5,000,000 members of Friendly Societies had any free choice of doctor, and those 5,000,000 persons had now the free choice of at least 29 out of the 30 doctors in the town, and he thought that ought to satisfy them. He had heard practically no complaint against the Insurance Commissioners. An honourable Member brought up a case of neglected treatment of an insured person. He wondered how many thousands of those cases could have been brought up before the National Insurance Act was passed. How many thousands of those cases were there in the East End of London who had died without any medical attendance at all? How many could have paid for a doctor? Of course, there must be complaints when half a million persons were receiving attendance every week from 17,000 medical men. The Act had provided an apparatus for dealing with those complaints, and it was the fullest that could be devised. He did not think that those complaints ought to be read out in the House of Commons as examples of what was going on all over the country, when they did not represent the full situation. Honourable Members knew from the knowledge obtained in their constituencies that medical benefit was being honestly and well administered by the panel medical men, and the complaints should be addressed not to the House of Commons but to the Insurance Committees, who had all the machinery for remedying grievances and inquiring into complaints, and after investigation, if necessary, strike off the panel the doctor who did not adequately attend and carry out the contract which he had entered into. There had been more doctoring and better doctoring. Every promise of the Chancellor of the Exchequer had been more than adequately fulfilled. The Act had every week shown greater efficiency in administration. Before he concluded he must pay a compliment to the Insurance Commissioners who had done the most remarkable administrative work which this country had seen for some time in launching a scheme which no other country had launched in four times the period. The administration was getting more efficient every week. The insured persons were becoming more and more conscious of the benefits of the Act. Some matters would be met this year by an amending Bill which the Government proposed to introduce. He would ask why on earth, instead of continuing dismal recriminations, should honourable gentlemen opposite not take pride in a national achievement and give the talents which they possessed to make the Act work better instead of continually attacking those who they knew were working the Act well.

Mr. H. W. FORSTER denied that the Opposition were making a party attack. They were trying to secure that the benefits which the Act gave should be brought to the doors of the insured persons through the administration for which the Government was responsible. He hoped that it would be possible for the Insurance Committees to allow insured persons to make their own arrangements with greater freedom than they did at the present time. He hoped that the Insurance Commissioners would give their attention to remedying the difficulty which insured persons experienced in getting from chemists the medicines which the medical men prescribed.

The motion was rejected by 270 votes to 77.

THURSDAY, MAY 1ST.

Medical Benefit in Rural Ireland.

Mr. BRIDGEMAN asked the Prime Minister whether he had undertaken to give an opportunity for discussing the question of the extension of medical benefit to rural districts in Ireland on the Civil Service Votes; and, if so, on what vote did he propose that the discussion should take place.—Mr. LLOYD GEORGE (on behalf of Mr. ASQUITH) said: My right honourable friend is anxious that the constitution and methods of the Treasury Committee should be discussed and an opportunity will arise on the Temporary Commissions Vote, but he thinks it would be better to postpone discussion till the committee has reported.

Lead Poisoning in Potteries.

Mr. NOEL BUXTON asked the Secretary of State for the Home Department whether he would give the statistics of lead poisoning in potteries for this year; and whether he would state whether any good result from the new regulations could yet be noted.—Mr. MCKENNA said in reply: The number of cases reported up to date is 26, of which 4 were fatal. The number for the corresponding period in 1912 was the same, 5, however, being fatal. The new regulations were only made on Jan. 2nd last, and entailed a great deal of work, both on the occupiers and the department, to give effect to the requirements. It is too early yet to look for any substantial change in the figures of lead poisoning.

Ireland and the Mental Deficiency Bill.

Answering Mr. HORNER, Mr. LLOYD GEORGE said that the question of extending the Mental Deficiency Bill to Ireland was under consideration. It was not proposed to introduce a separate Bill.

Public Authorities and the Treatment of Tuberculosis.

Mr. CHIOZZA MONEY asked the President of the Local Government Board whether he would state the number of public authorities which had availed themselves of the provisions of the capital grant of £1,500,000 towards the building of institutions for the treatment of tuberculosis; and how much of this sum had yet been granted to or earmarked for particular authorities.—Mr. BURNS answered: The Board have been in communication with all the county councils and county borough councils in England, and in the majority of cases have promised capital grants towards the cost of providing institutions. Some small grants have already been paid, but in most of the cases the schemes had not been matured in sufficient detail to enable me to say what grants will be given. I may add that practically all these authorities have already indicated that they propose to avail themselves of the capital grant, and that the whole of the English share of the grant has been provisionally earmarked in proportion to the population of the several areas.

Mr. ASTOR asked the right honourable gentleman what authority in London the Board proposed to recognise as the central organising authority for the preparation and coördination of a general scheme for dealing with tuberculosis in London; and whether the Board had approached any authority for this object.—Mr. BURNS answered: The Local Government Board propose to recognise the London County Council as the central organising body for the provision of institutional treatment. The London County Council have already been informed to this effect, and the Board understand that the Council have such a scheme in preparation.

Preservatives in Milk and Cream.

Mr. CHARLES BATHURST asked the President of the Local Government Board whether, in the opinion of his expert advisers, the use of less than 0·20 per cent. of boron trioxide as a preservative in cream was injurious to the health of infants, pregnant women, and invalids; whether the new milk and cream regulations of his department permitted its use for this purpose; and, if so, in what quantities.—Mr. BURNS said in reply: In regard to the first part of this question, there is no exact concensus of opinion as to the amount of boron trioxide which may be necessary to produce injurious effects in different persons. The Regulations to which reference is made were not intended to control the amount of preservative which might be added, but only to secure that no preservative should be added to cream without declaration on the label as to the amount. The provisions of the Sale of Food and Drugs Act, 1875, are available for preventing the use of preservatives to an extent such as to render any article injurious to health.

MONDAY, MAY 5TH.

Scottish Clerks' Association and Medical Benefit.

Sir J. D. REES asked the Secretary to the Treasury whether the National Insurance Act Amendment Bill would provide a remedy for the grievance of the Scottish Clerks' Association, which joined in the Chancellor of the Exchequer's scheme on the understanding that their method of providing medical benefits and free choice of medical attendant was saved, whereas it had in fact been sacrificed, notwithstanding the fact that Section 15, subsection (4), provided for satisfactory recognition.—Mr. MASTERMAN answered: So far as I am aware there is nothing to prevent the association from working a scheme for additional medical benefit on the private side with free choice of their members for ordinary attendance amongst panel doctors, or, where the Local Insurance Committee permits it, amongst non-panel doctors also, of whom in Scotland in most districts there are very few. The Commissioners are advised that the special medical scheme of the association could not legally be approved as a system or institution under Section 15 (4) of the National Insurance Act. If the association chooses to adjust itself to the conditions laid down by the Act it can carry out its scheme.

Administration of Anæsthetics by Unqualified Persons.

Mr. MASTERMAN informed Sir J. D. REES that dental treatment was not included within medical benefit under the Insurance Act. He accordingly knew nothing about unqualified persons administering anæsthetics for dental operations in connexion with the Act.

Prescriptions for Insured Persons.

Mr. F. HALL (Dulwich) asked the Secretary to the Treasury whether prescriptions for insured persons given by non-panel doctors would be dispensed and treated in the same way as those prescribed by panel doctors.—Mr. MASTERMAN answered: No. Section 15 (3) contemplates that when insured persons are allowed to make their own arrangements for medical attendance and treatment they shall also make their own arrangements for the supply of medicines and appliances. It would be obviously unfair to require chemists on the panel, whose remuneration is based on a capitation system and accordingly limited to the sum available, to supply medicines to an unlimited extent on the prescriptions of doctors who have not like those on the panel a collective responsibility with regard to the arrangements made for medical benefit in the area.

Sanatorium Benefit.

In the course of a reply to Sir C. KINLOCH-COOKE, Mr. MASTERMAN said: The Chancellor of the Exchequer informed the country that every person would receive sanatorium treatment who was in need of that treatment. So far as I know every person who is in need of sanatorium treatment is receiving it.

Medical Certificates for Insured Persons at Newcastle-upon-Tyne.

Mr. JOHN WARD asked the Secretary to the Treasury whether he had seen a circular issued and signed by the chairman of the Newcastle-upon-Tyne Medical Committee, which stated that only one free certificate would be given to sick insured persons, and that 1s. would be charged for each additional certificate, and, if so, what action, if any, he intended to take in the matter.—Mr. MASTERMAN replied: I am informed by the Insurance Committee that the charge of 1s. referred to certificates required for purposes other than for sickness benefit under the Act; but as the circular issued by the Local Medical Committee in January last gave rise to misunderstanding, the Insurance Committee took the matter up, with the result that wherever any charge had been made for certificates required for the purposes of the Act the money has been refunded to the insured persons.

Ireland and Medical Benefit.

Mr. ASQUITH (the Prime Minister) informed Mr. BRIDGEMAN that the constitution and methods of procedure of the Treasury Committee which had investigated the question of the extension of medical benefit to Ireland could be discussed on the Temporary Commissions vote. If a Bill was introduced to extend medical benefit to Ireland the subject could, of course, be discussed then. The Committee had not yet reported.

Infantile Mortality.

In reply to Mr. MCCALLUM SCOTT, Mr. BURNS wrote: The rate of infantile mortality in England and Wales was in 1911 130 per 1000 births, and in 1912 95 per 1000 births.

TUESDAY, MAY 6TH.

Medical Referees and Insurance Committees.

Mr. TYSON WILSON asked the Secretary to the Treasury how many Insurance Committees had appointed medical referees; and what the duties of the referees were and from what fund they were paid.—Mr. MASTERMAN wrote in reply: If my honourable friend refers to the medical referees who will determine questions as to the scope of medical benefit under paragraph 55 of the medical regulations, no such referees have yet been appointed, as no such questions have yet arisen for decision in this manner. One or two medical advisers have been appointed in connexion with the checking of sickness certificates, &c.

London Skin Hospital.

Dr. ADDISON asked the Secretary to the Treasury whether he was aware that the committee of management of the London Skin Hospital, 40, Fitzroy-square, were considering the question of the dismissal of Dr. W. F. Roach from their staff, of which, in common with other general medical practitioners, he was a member, on account of his having placed his name on the medical list under the National Insurance Act; and, if so, whether he would consider what steps were possible to protect medical men rendering service under the National Insurance Act from treatment of this character.—Mr. MASTERMAN furnished the following written reply: I have had no previous information as to this case. I find it difficult to imagine that a hospital deriving support from public subscriptions could contemplate such action as is suggested on the ground that a doctor has accepted duties under the provisions of an Act of Parliament.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

ASHTON, GEORGE, M.D. Vict., has been reappointed Medical Officer for Home Patients at the Manchester Royal Infirmary.

BENTON, G. M., M.B., Ch.B. Vict., has been reappointed Anæsthetist at the Manchester Royal Infirmary.

BERRY, WILLIAM A., M.B., B.S. Lond., D.P.H. Oxf., has been appointed Deputy Medical Officer of Health, Deputy Medical Superintendent of the Isolation Hospital, and Assistant School Medical Officer for the Borough of East Ham.

BEST, W. J., M.R.C.S., L.S.A., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Dover District of the county of Kent.

BOLTON, R. LEE, L.R.C.P. & S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer and Lecturer on Hygiene for the Leeds Training College.

BROWN, W. LANGDON, M.D. Cantab., F.R.C.P. Lond., has been appointed Assistant Physician to St. Bartholomew's Hospital.

CUNLIFFE, E. N., M.D. Vict., has been appointed Honorary Assistant Physician to the Manchester Royal Infirmary.

DOUGLAS, W. R., M.B., B.S. Vict., has been reappointed Assistant Surgical Officer at the Manchester Royal Infirmary.

GREENE, C. W., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Chatham District of the county of Kent.

JEFFERSON, J. C., M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Officer at the Central Branch of the Manchester Royal Infirmary.

LANCASHIRE, G. H., M.D. Brux., M.R.C.S., L.R.C.P. Lond., has been appointed Lecturer in Dermatology in the University of Manchester.

LAPAGE, C. P., M.D. Vict., M.R.C.P. Lond., has been appointed Lecturer on Diseases of Children in the University of Manchester.

LEECH, E. B., M.D. Cantab., M.R.C.P. Lond., has been reappointed Assistant Medical Officer at the Manchester Royal Infirmary.

MELLAND, C. H., M.R.C.S. Eng., L.R.C.P. Lond., has been reappointed Assistant Medical Officer at the Manchester Royal Infirmary.

SEWELL, D. L., M.B., B.S. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Assistant Surgical Officer to the Aural Department at the Manchester Royal Infirmary.

TYLECOTE, F. E., M.D. Vict., has been reappointed Assistant Medical Officer at the Manchester Royal Infirmary.

WALKER, JAMES, M.B., Ch.B. Vict., has been appointed Assistant Director of the Clinical Laboratory at the Manchester Royal Infirmary.

WATKIN, ARTHUR C., M.R.C.S., L.R.C.P. Lond., D.P.H., has been appointed Tuberculosis Officer to the County Council of Salop.

WILKINSON, A. T., M.D. Lond., has been appointed Honorary Consulting Physician to the Manchester Royal Infirmary.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ABERYSTWYTH INFIRMARY AND CARDIGANSHIRE GENERAL HOSPITAL.—House Surgeon and Secretary. Salary £150 per annum, with board and washing.

BARNSLEY, BECKETT HOSPITAL AND DISPENSARY.—Senior and Junior House Surgeons, unmarried. Salaries £120 and £100 per annum respectively, with apartments, board, and laundry.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—Junior Resident Medical Officer. Salary at rate of £40 per annum, with board, residence, &c.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with board and laundry.

BIRKENHEAD UNION INFIRMARY AND WORKHOUSE.—Senior Resident Assistant Medical Officer. Salary £130 per annum, with board, apartments, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL.—Third House Surgeon. Salary £75 per annum, with board, rooms, &c.

BIRMINGHAM, QUEEN'S HOSPITAL.—Two House Surgeons for six months. Salary at rate of £50 per annum, with board, lodging, and washing.

BIRMINGHAM, RUBERY HILL ASYLUM.—Junior Assistant Medical Officer. Salary £200 per annum, with apartments, board, and washing.

BIRMINGHAM UNION, DUDLEY-ROAD INFIRMARY.—Assistant Medical Officer. Salary £125 per annum, with apartments, rations, laundry, and attendance.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.—Gynæcologist.

BRADFORD EDUCATION COMMITTEE.—Two Assistants (male and female) to the School Medical Officer. Salary £350 per annum each. Also School Dentist. Salary £300 per annum.

BRENTFORD UNION INFIRMARY, WORKHOUSE AND SCHOOLS.—Medical Superintendent and Medical Officer. Salary £400 per annum, with rations and attendance.

BRIDGWATER HOSPITAL.—House Surgeon, unmarried, for six months. Salary at rate of £100 per annum, with board, lodging, and washing.

BRIGHTON, ROYAL SUSSEX COUNTY HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with apartments, board, and laundry.

BRISTOL, COSSHAM MEMORIAL HOSPITAL, Kingswood.—House Surgeon. Salary £100 per annum, with board, lodging, and washing.

BRISTOL GENERAL HOSPITAL.—First House Physician, Second House Physician, and Casualty House Surgeon, all for six months. Salary £80 per annum, with board, residence, &c. Also Honorary Surgeon and Honorary Assistant Surgeon.

BRISTOL ROYAL INFIRMARY.—Obstetric and Ophthalmic House Surgeon for six months. Salary at rate of £75 per annum, with board, laundry, and apartments.

BROMSGROVE, WORCESTERSHIRE ASYLUM.—Second Assistant Medical Officer. Salary £200 per annum, with quarters, board, washing, and attendance.

BURY ST. EDMUNDS, WEST SUFFOLK GENERAL HOSPITAL.—Resident Medical Officer, unmarried. Salary £100 per annum, with board, lodging, and laundry.

BUXTON, DEVONSHIRE HOSPITAL, Derbyshire.—Assistant House Physician for six months. Salary £100 per annum, with apartments, board, and laundry.

CANTERBURY BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, washing, and attendance.

CARDIFF, KING EDWARD VII.'S HOSPITAL.—Two Honorary Physicians.

CARDIFF, KING EDWARD VII. WELSH NATIONAL MEMORIAL ASSOCIATION.—Medical Officer to the Tuberculosis Hospital. Salary £200 per annum, with board, lodging, &c.

CHELSEA HOSPITAL FOR WOMEN, Fulham-road, S.W. — Clinical Assistant.

CHELTENHAM GENERAL HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with board, lodging, and washing.

CHESTERFIELD AND NORTH DERBYSHIRE HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board, apartments, and laundry. Also House Physician. Salary £90 per annum, with board, apartments, and laundry.

COBHAM, SURREY, SCHIFF HOME OF RECOVERY.—Resident Surgical Officer for six months. Salary £75, with board, lodging, and washing.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry.—Junior House Surgeon. Salary £90 per annum, with rooms, board, washing, and attendance.

DENBIGH, DENBIGHSHIRE INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—House Physician. Salary at rate of £100 per annum, with apartments, board, &c.

DEVONPORT, ROYAL ALBERT HOSPITAL.—House Surgeon, unmarried. Salary £50 for first six months, £75 for second. Also Assistant House Surgeon, unmarried. Salary at rate of £75 per annum, with board and laundry.

DUMFRIES AND GALLOWAY ROYAL INFIRMARY.—Assistant House Surgeon. Salary £55 per annum, with board and washing.

DURBAN, ADDINGTON HOSPITAL.—Junior Medical Officer, unmarried. Salary £250 per annum, with quarters, rations, and washing.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Surgeon. Salary at rate of £75 per annum, with board, residence, and washing.

EXETER, ROYAL DEVON AND EXETER HOSPITAL.—Assistant House Surgeon for six months. Salary at rate of £80 per annum, with board, apartments, and washing.

FARRINGDON GENERAL DISPENSARY AND LYING-IN CHARITY, 17, Bartlett's-buildings, Holborn Circus, E.C.—Honorary Ophthalmic Surgeon and Honorary Gynæcologist. Also Resident Medical Officer. Salary £100 per annum, with rooms, attendance, fire, and lighting.

FRENCH HOSPITAL AND DISPENSARY, 172, Shaftesbury-avenue, W.C.—Two Anæsthetists. Salary £25 each per annum.

GLASGOW DISTRICT MENTAL HOSPITAL, Lenzie.—Junior Assistant Medical Officer. Salary £150 per annum, with board, lodging, and laundry.

GREENWICH, METROPOLITAN BOROUGH OF, TUBERCULOSIS DISPENSARY.—Medical Officer. Salary at rate of £350 per annum.

GUY'S HOSPITAL DENTAL SCHOOL.—Radiographer. Salary £50 per annum.

HASTINGS, EAST SUSSEX HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with residence, board, and washing. Also Assistant House Surgeon. Salary at rate of £70 per annum, with residence, board, and washing.

IPSWICH, COUNTY BOROUGH OF.—Assistant Medical Officer of Health and School Medical Inspector. Salary £300 per annum.

IPSWICH, EAST SUFFOLK HOSPITAL.—House Physician. Salary £80 per annum, with board, residence, and laundry.

KING'S COLLEGE FOR WOMEN.—Department of Home Science.—Female Lecturer in Hygiene. Salary £150 per annum.

LANCASTER COUNTY ASYLUM.—Assistant Medical Officer. Salary £150 per annum, with board, apartments, washing, and attendance.

LEAMINGTON SPA, WARNEFORD, LEAMINGTON, AND SOUTH WARWICKSHIRE GENERAL HOSPITAL AND MIDLAND COUNTIES BATHING INSTITUTION.—House Physician. Salary £85 per annum, with board, residence, and laundry.

LINCOLN MENTAL HOSPITAL, The Lawn, Lincoln.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, &c.

LIVERPOOL EYE AND EAR INFIRMARY, Myrtle-street.—House Surgeon. Salary £80 per annum.

LIVERPOOL, PARK HILL SANATORIUM.—Resident Medical Superintendent, unmarried. Salary at rate of £350 per annum, with board, residence, and washing.

LIVERPOOL WORKHOUSE HOSPITAL, Brownlow-hill.—Resident Assistant Medical Officer. Salary £100 per annum, with apartments and usual residential allowances.

LONDON HOSPITAL DENTAL SCHOOL.—Two House Surgeons.

LOUGHBOROUGH AND DISTRICT GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon. Salary £120 per annum, with rooms, attendance, board, and washing.

MANCHESTER, COUNTY ASYLUM, Prestwich.—Locum Tenens for six to eight weeks, unmarried.

MANCHESTER, VICTORIA UNIVERSITY OF.—Lecturer in Observation of Children and School Hygiene.

MONTREAL, McGILL UNIVERSITY.—Robert Reford Chair of Anatomy.

NEWCASTLE-UPON-TYNE DISPENSARY.—Visiting Medical Assistants. Salary £200 per annum.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £180, with apartments, attendance, light, and fuel.

NOTTINGHAM GENERAL HOSPITAL.—Locum Tenens for 14 weeks. Salary £3 3s. per week, with board, residence, and laundry.

PADDINGTON GREEN CHILDREN'S HOSPITAL, London, W.—Honorary Surgeon to Eye Department. Also House Surgeon. Salary at rate of £52 10s. per annum, with board and residence.

PORTSMOUTH, ROYAL PORTSMOUTH HOSPITAL.—House Physician for six months. Salary £75 per annum, with board.

PRESTON, COUNTY ASYLUM, Whittingham.—Assistant Medical Officer, unmarried. Salary £150 per annum, with board, apartments, and washing.

PRINCE OF WALES'S GENERAL HOSPITAL, Tottenham, N.—Honorary Physician or Surgeon to the X Ray and Electrical Department. Also Clinical Assistants for six months.

READING, ROYAL BERKSHIRE HOSPITAL.—Second House Surgeon for six months. Salary £80 per annum, with apartments, board, and washing.

REDHILL, EARLSWOOD ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £150 per annum, with board, residence, washing, &c.

RICHMOND, SURREY, ROYAL HOSPITAL.—Assistant House Surgeon. Salary £70 per annum, with board, apartments, and washing.

ROTHERHAM HOSPITAL AND DISPENSARY.—Assistant House Surgeon. Salary £100 per annum, with board, lodging, and washing.

ROYAL EAR HOSPITAL, Soho.—House Surgeon. Salary £40 per annum.

ROYAL WESTMINSTER OPHTHALMIC HOSPITAL, King William-street, West Strand, W.C.—Clinical Assistants for six months.

ST. ALBANS, MIDDLESEX COUNTY ASYLUM, Napsbury.—Junior Assistant Medical Officer. Salary £200 per annum, with board, lodging, washing, and attendance.

ST. PAUL'S HOSPITAL FOR SKIN AND GENITO-URINARY DISEASES, Red Lion-square, Holborn.—Honorary Assistant Surgeon. Also Clinical Assistant.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, lodging, and washing.

SALISBURY INFIRMARY.—Assistant House Surgeon, unmarried. Salary £50 per annum, with apartments, board, &c.

SHEFFIELD CITY.—Assistant Medical Officer to the Tuberculosis Dispensary. Salary £300 per annum.

SHEFFIELD, JESSOP HOSPITAL FOR WOMEN.—Assistant House Surgeon, unmarried. Salary £60 per annum, with board, residence, and laundry.

SHEFFIELD ROYAL HOSPITAL.—Assistant House Physician, unmarried. Salary £80 per annum, with board, lodging, and washing.

SHEFFIELD ROYAL INFIRMARY.—Assistant House Surgeon, unmarried. Salary £70 per annum, with board and residence.

SOUTHAMPTON, FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Junior House Surgeon for six months. Salary at rate of £80 per annum, with rooms, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £90 per annum, with residence, board, and washing.

STOKE-ON-TRENT, NORTH STAFFORDSHIRE INFIRMARY, Hartshill.—House Surgeon. Salary £100 per annum, with apartments, board, and washing.

SURREY COUNTY COUNCIL.—Two Tuberculosis Medical Officers. Salaries £500 per annum each.

TAUNTON, SOMERSET AND BATH ASYLUM, Cotford.—Assistant Medical Officer, unmarried. Salary £180 per annum, with apartments, board, washing, attendance, &c.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with rooms, board, and washing.

WARRINGTON, LANCASHIRE COUNTY ASYLUM, Winwick.—Locum Tenens Medical Officer, unmarried, for five months. Salary 5 guineas per week, with apartments, board, attendance, and washing.

WESTERN GENERAL DISPENSARY, Marylebone-road, N.W.—Honorary Physician and Honorary Dentist.

WEST HAM, COUNTY BOROUGH OF.—Assistant School Medical Officer. Salary £250 per annum.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer. Salary at rate of £100 per annum, with board, rooms, and laundry.

THE Home Secretary gives notice of a vacancy for a Medical Referee under the Workmen's Compensation Act, 1906, for Blackburn and Darwen, Haslingden and Accrington, Bacup and Rawtenstall, and Clitheroe County Courts.

New Addresses.

JONES, R. ARTHUR, M.R.C.S., L.R.C.P., 1, Calderstones-road, Mossley Hill, Liverpool (late 39, Marquess-road, Canonbury, N.).

A fee of 2s. 6d. is charged for the insertion of Notices of Change of Address, which must not exceed two lines.

Births, Marriages, and Deaths.

BIRTHS.

BEANE.—On April 29th, at Main-street, Long Eaton, Derbyshire, to Isabel Landells and R. Leonard Beane, L.R.C.P. Lond., M.R.C.S., a daughter.

COLT.—On May 5th, at 12, Bon Accord-square, Aberdeen, the wife of G. Herbert Colt, F.R.C.S., of a daughter.

CUSACK.—On April 30th, at South Hill Park, Hampstead, the wife of Lieutenant-Colonel R. O. Cusack, late R.A.M.C., of a daughter.

HILDESHEIM.—On May 3rd, at The Corner House, Northwood, the wife of O. Hildesheim, M.D., of a son.

MARTIN.—On May 4th, at Wimpole-street, the wife of Dr. Sidney Martin, F.R.S., of a daughter (Bridget).

SANKEY.—On May 2nd, at St. Giles', Oxford, the wife of Richard H. Sankey, M.B., of a son.

MARRIAGES.

COLLYER—LOGAN.—On April 30th, at Belgrave Presbyterian Church, London, S.W., Brice Collyer, M.D. Lond., to Amy Elizabeth, only daughter of Samuel Logan, of Rurki, India.

DRUITT—BEADEL.—On April 30th, at St. Peter's Church, Bexhill-on-Sea, Daniel Cuthbert Druitt, M.R.C.S., L.R.C.P., to Evelyn Mary, younger daughter of Mr. Charles Beadel (and the late Mrs. Beadel), of "Hillside," Bexhill-on-Sea.

DEATHS.

HILLS.—On May 4th, at Prince of Wales-road, Battersea Park, S.W., Augustus Phillips Hills, M.R.C.S. Eng., son of the late George Hills, M.D., F.R.C.S., aged 57.

MANLEY.—On May 4th, at New-street, West Bromwich, Herbert Manley, M.D., D.P.H., Barrister-at-Law, aged 57.

THOROWGOOD.—On May 2nd, at Springfield, Bognor, John Charles Thorowgood, M.D., F.R.C.P., in his 81st year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ARNOLD, EDWARD, London.

Text-book of General Pathology. By the following Contributors:—A. P. Beddard, A. E. Boycott, C. H. Browning, A. E. Garrod, J. S. Haldane, I. Walker Hall, A. F. Hertz, F. W. Mott, M. S. Pembrey, J. Ritchie, J. H. Ryffel, S. V. Sewell, J. Lorrain Smith, and E. Ainley Walker. Edited by M. S. Pembrey and J. Ritchie. Price 18s. net.

Old Age, its Care and Treatment in Health and Disease. By Robert Saundby, M.D. Edin., Hon. LL.D. St. Andrews and McGill, Hon. M.Sc. Birm., F.R.C.P. Lond., Professor of Medicine in the University of Birmingham. Price 7s. 6d. net.

Diseases of Children. By Various Authors. Edited by Archibald E. Garrod, D.M., M.A., F.R.C.P., F.R.S., Frederick E. Batten, M.D., M.A., F.R.C.P., and Hugh Thursfield, D.M., M.A., F.R.C.P. Price 30s. net.

CHAPMAN AND HALL, LIMITED, London.

The Conquest of Bread. By P. Kropotkin. New and Cheaper Edition. Price 1s. net.

CHURCHILL, J. AND A., London.

The Examination of Waters and Water-Supplies. By John C. Thresh, D.Sc. Lond., M.D. Vic., D.P.H. Camb. Second edition. Price 18s. net.

CLARENDON PRESS, Oxford.

The Works of Aristotle. Translated into English. De Coloribus. De Audibilibus, Physiognonica, De Plantis, Mechanica, Ventorum Situs et Cognomina. De Melisso Xenophane Gorgia. By T. Loveday, M.A., Lecturer in Philosophy in the University of Sheffield; and E. S. Forster, M.A., Lecturer in Greek in the University of Sheffield. Price 5s. net.

FISCHER, GUSTAV, Jena.

Bericht über eine Malariaexpedition nach Jerusalem. Von Marineoberstabsarzt S. II. Prof. Dr. P. Mühlens, Abteilungs-Vorsteher am Institut für Schiffs- und Tropenkrankheiten, Hamburg. Price not stated.

HEFFER, W., AND SONS, LIMITED, Cambridge.

Practical Physiological Chemistry. By Sydney W. Cole, M.A., Trinity College, Cambridge, Demonstrator of Physiology, Cambridge University. Third edition. Price 7s. 6d. net.

HODGE, WILLIAM, AND COMPANY, 12, Bank-street, Edinburgh; and London.

Trial of George Henry Lamson. Edited by Hargrave L. Adam. Price 5s. net.

LEHMANN, EMIL, Leipzig.

Ueber Plattfussbehandlung unter besonderer Berücksichtigung rationellen Schuhwerks. Inaugural-Dissertation zur Erlangung der Doktorwürde in der Medizin, Chirurgie und Geburtshilfe der Hohen Medizinischen Fakultät der Universität Leipzig vorgelegt von Max Huber, prakt. Arzt aus Teuplitz N.L. Price not stated.

LEWIS, H. K., London.

A Treatise on the Mineral Waters of Vichy. For the Use of Practitioners. By Charles Cotar, M.D. Paris, Consulting Physician at Vichy. With a Foreword by Vaughan Harley, M.D., Professor of Pathological Chemistry, University College, London. Price 4s. net.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL ASPECTS OF THE BALKAN WAR.

THE April number of *Archives de Médecine et de Pharmacie Militaires*, published under the orders of the French Minister of War, contains some interesting observations on the military medical aspects of what may now, we hope, be safely described as the late war in the Balkans. Two classes of military hospitals are described, permanent and temporary—the former comprised the ordinary civil and military territorial hospitals such as those existing at Belgrade, Nisch, and Kiagouyevatz. Few Servian or Bulgarian surgeons remained for duty in these as they had been sent to the front with the fighting troops and their places had been filled with foreigners, who arrived in large numbers from the commencement of the campaign. A large number of temporary and auxiliary hospitals were formed, 18 alone being manned in Belgrade in November, and this number was increased to 26 later on. These were installed in barracks, schools, public buildings, &c. One at the Military College at Sofia accommodated 1500 wounded. In these, also, medical treatment was carried out mainly by foreigners: 2000 wounded were accommodated in November at Belgrade and 5000 at Sofia. Nurses from the various Red Cross societies were very numerous, in many hospitals the proportion being one to 8, 7, and even to every 6 wounded men. Organisation is reported as good, often very satisfactory; operating theatres and rooms for the application of dressings were installed almost everywhere. X ray outfits were, however, most lacking. A certain number of the wounded were accommodated in private houses and came to the hospitals to have their wounds dressed. The wounds amongst the Servians and Bulgarians are reported as mainly produced by Mauser rifles and Krupp guns, the former being the more common, the latter being mostly shrapnel wounds. High velocity, small-bore rifle bullets of the Mauser and Mannlicher types perforate cleanly and cause for the most part aseptic wounds. In the case of bone injuries the cancellous tissue was merely tunnelled, but hard bone was splintered. Shrapnel wounds, on the other hand, were usually severe, the skin was often much lacerated, muscles torn, and bone much shattered. These wounds mostly became septic, as fragments of clothing were often driven in by the bullets. The artillery practice of the Turks does not, however, appear to have been so effective as that of the Allies, and consequently the number of wounded treated for shrapnel fire was not so great as those from rifle bullets.

If the care given to the wounded Servians and Bulgarians has produced excellent results, if the mortality amongst the wounded who were able to leave the field of battle was low, and if the infected wounds have been few, these factors have been mainly due to the three following causes:—1. The universal adoption of individual first field dressings: officers and men often dressed each other even in the firing line. 2. The general employment of an application of tincture of iodine and a dry dressing by the first aid parties in the field. 3. The practice of systematic removal of the sick and wounded from the front to the base hospitals.

THE DECREASE IN THE GERMAN BIRTH-RATE.

SUPPLEMENTARY to the figures given in the annotation on this subject in our last issue (THE LANCET, May 3rd, 1913, p. 1255), a correspondent in Germany sends us the now available statistics. These show that in 1912 the excess of births over deaths in Prussia increased by 56,595. The birth-rate is, however, still decreasing, as is evident from the fact that the total number of births during the past year was 64,243 less than the annual average during the preceding ten years. In fact, this excess is attributable largely to the decrease in the number of deaths, which was 53,332 lower than the average for the past ten years. During the years from 1902 to 1911 the annual average of births amounted in Prussia to 1,284,110 and the deaths to 725,241, so that the average excess of births over deaths was 558,869.

HISTORICAL MEDICAL MUSEUM.

ACCORDING to the account which we have received, the Historical Medical Museum, organised by Mr. Henry S. Wellcome, which is to be opened in London towards the end of next month, will include objects of exceptional interest. In the Science Section there will be a large collection of the original apparatus used by Galvani in making his first experiments in galvanism in the eighteenth century. A remarkable collection of votive offerings for health is also promised. The custom of presenting these offerings in cases of sickness is a very ancient one, and the collection will include Græco-Roman votive offerings of special anatomical and pathological interest in silver, bronze, marble, and terra-cotta, together with a number of similar

objects used for the same purpose in mediæval and modern times. The exhibition will also include ancient microscopes and optical instruments, gathered from all quarters of Europe, and a selection of surgical instruments used by famous surgeons when operating on historical personages. There will also be on view a collection of amulets and charms connected with English folk medicine, and a collection of early medical medals and coins from the Græco-Roman period, together with many ancient manuscripts and early printed medical books.

Dr. E. W. Floyd.—1. The lotion consisted of a solution of chlorinated soda. (The 8 ounces for which 11s. were charged are worth about 1d.) 2. The pink powder consisted of borax with colouring matter. 3. The ointment contained chalk. 4. The pill contained a vegetable extract, probably a laxative—e.g., cascara. The quantity of material in some cases was much too small to permit of elaborate analysis.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

FRIDAY.

SECTION OF OTOLOGY (Hon. Secretaries—H. J. Davis, G. J. Jenkins): at 5 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1913-1914.

Demonstration of Cases:

Mr. Peters: Unilateral Deformity of the Ear with Obliterated Meatus.

Mr. H. J. Davis: (1) Obliteration of Meatus by Bone following Operation for Mastoiditis with Intracranial Suppuration; (2) Epithelioma of Helix.

Mr. Hastings: Fibroma of Auricle.

Dr. Donelan: Persistent Cough: Irritation of Chorda Tympani by Spicule of Steel in Tympanic Cavity.

Dr. Dan McKenzie and Dr. Dundas Grant: Prominent Auricles Treated by Operation.

Dr. McKenzie: Thrombo-phlebitis of Mastoid Emissary Vein.

Mr. O'Malley: Congenital Specific Deafness Treated by Neo-salvarsan.

Mr. Cheatle: Case of Phlebitis without Thrombosis of Lateral Sinus.

The President (Dr. Dundas Grant) will exhibit several cases in addition to the above.

SECTION OF ELECTRO-THERAPEUTICS (Hon. Secretaries—Cecil R. C. Lyster, G. Allpress Simmons): at 8.30 P.M.

Annual General Meeting.—Election of Officers and Council for Session 1913-1914.

Clinical Evening.

Demonstration of Cases and Specimens.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC, 22, Chenies-street, W.C.

TUESDAY.—4 P.M., Dr. F. W. Price: Clinique (Medical). 5.15 P.M., Lecture:—Dr. E. Wynter: Pericarditis.

WEDNESDAY.—4 P.M., Mr. J. Cantlie: Clinique (Surgical). 5.15 P.M., Lecture:—Dr. E. C. Hort: The Relationship of Gastric and Duodenal Ulcers and Hæmorrhage to Micro-organisms.

THURSDAY.—4 P.M., Mr. H. Lett: Clinique (Surgical). 5.15 P.M., Dr. W. H. Stoddart: Puerperal Insanity.

FRIDAY.—4 P.M., Mr. H. A. Kisch: Clinique (Ear, Nose, and Throat).

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

TUESDAY.—10 A.M., Gynæcological Operations. 10.30 A.M., Surgical Registrar: Demonstration of Cases in Wards. 12 noon, Demonstration of Fractures, &c. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin.

WEDNESDAY.—10 A.M., Diseases of Children. Operations of the Throat, Nose, and Ear. 11 A.M., Demonstration of Minor Operations. 12 noon, Lecture:—Abdominal Diagnosis. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Diseases of the Eye. Diseases of Women.

THURSDAY.—10.30 A.M., Gynæcological Demonstration. 12.15 P.M., Lecture:—Neurological Cases. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. 2.30 P.M., Diseases of the Eye. Orthopædics.

FRIDAY.—10 A.M., Gynæcological Operations. 10.30 A.M., Lecture:—Practical Medicine. 12.15 P.M., Lecture:—Clinical Pathology. 2 P.M., Medical and Surgical Clinics. X Rays. Operations. Diseases of the Throat, Nose, and Ear. 2.30 P.M., Diseases of the Skin.

SATURDAY.—10 A.M., Diseases of Children. Operations of the Throat, Nose, and Ear. Diseases of the Eye. 12 noon, Lecture:—Surgical Anatomy of the Abdomen. 2 P.M., Medical and Surgical Clinics. X Rays. Operations.

LONDON SCHOOL OF CLINICAL MEDICINE, Dreadnought Hospital, Greenwich.

MONDAY.—Out-patient Demonstrations:—10 A.M. Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2.15 P.M., Mr. W. Turner: Surgery. 3 P.M., Mr. W. Turner: Operations. 3.15 P.M., Sir Dyce Duckworth: Medicine. 4.15 P.M., Mr. R. Lake: Ear and Throat.

TUESDAY.—Out-patient Demonstrations:—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Mr. R. Carling: Surgery. 3.15 P.M., Dr. G. Rankin: Medicine. 4.15 P.M., Sir Malcolm Morris: Skin.

WEDNESDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—2 P.M., Mr. L. V. Cargill or Mr. Choyce: Operations. Dr. A. Davies: Pathological Demonstration. 2.15 P.M., Dr. F. Taylor: Medicine. 3.15 P.M., Mr. Cargill: Eye Clinique. 4.30 P.M., Mr. C. C. Choyce: Surgery. 4.30 P.M., Special Lecture:—Mr. C. C. Choyce: Periosteomyelitis (Acute).

THURSDAY.—Out-patient Demonstrations:—10 A.M., Dr. Singer: Medical. Mr. H. Curtis: Surgical. 12 noon, Mr. G. N. Biggs: Throat, Nose, and Ear.—2 P.M., Mr. R. Carling or Mr. W. Turner: Operations. 3.15 P.M., Dr. R. Wells: Medicine. 4.30 P.M., Special Lecture:—Sir StClair Thomson: Tracheotomy.

FRIDAY.—Out-patient Demonstrations;—10 A.M., Dr. G. Holmes: Medical. Mr. Cole: Surgical. 12 noon, Dr. H. MacCormac: Skin.—2 P.M., Mr. L. McGavin: Operations. 2.15 P.M., Sir John Rose Bradford; Medicine. 3.15 P.M., Mr. L. McGavin: Surgery.

SATURDAY.—Out-patient Demonstrations: 10 A.M., Dr. F. Langmead: Medical. Surgical. 11 A.M., Mr. R. E. Bickerton: Eye.—10 A.M., Radiography.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patient (Mr. E. Gillespie). 2.30 P.M., Medical Out-patient (Dr. T. R. Whipham); Nose, Throat, and Ear (Mr. H. D. Gillies). 3 P.M., Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

TUESDAY.—Clinic; 2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld); Surgical (Mr. Howell Evans); Gynæcological (Dr. A. E. Giles). 3.30 P.M., Medical In-patient (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2 P.M., Throat Operations (Mr. Gillies). 2.30 P.M., Children's Out-patient (Dr. T. R. Whipham); Skin (Dr. G. N. Meachen); Eye (Mr. R. P. Brooks). 3 P.M., X Rays (Mr. W. Steuart); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan). 5.30 P.M., Eye Operations (Mr. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patient (Dr. A. J. Whiting); Surgical (Mr. Carson). 3 P.M., Medical In-patient (Dr. G. P. Chappel).

FRIDAY.—2.30 P.M., Operations. Clinics:—Medical Out-patient (Dr. A. G. Auld): Surgical (Mr. E. Gillespie); Eye (Mr. R. P. Brooks). 3 P.M., Medical In-patient (Dr. R. M. Leslie); Clinical Pathology and Pathological Demonstration (Dr. W. H. Duncan).

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C.

FRIDAY.—3.30 P.M., Clinical Lecture:—Mr. S. Scott: Forced Movements.

QUEEN'S HOSPITAL FOR CHILDREN, Board Room of the Hospital, Hackney-road, N.E.

FRIDAY.—4 P.M., Mr. L. Mummery: Rectal Diseases in Children and Infants.

ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, 49, Leicester-square, W.C.

THURSDAY.—6 P.M., Dr. W. Hampson: Some Useful but Little Known Forms of Electrical Treatment.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W.

TUESDAY.—3 P.M., Prof. W. Stirling: Recent Physiological Inquiries—(3) Ductless Glands and their Dominating Influence.

ROTUNDA HOSPITAL POST-GRADUATE COURSES, Dublin.

TUESDAY.—10 A.M., Major Operations. 4 P.M., Class in Gynæcological Diagnosis.

WEDNESDAY.—10 A.M., Obstetrical Lecture: The Induction of Labour. 11 A.M., Examination of Patients and Minor Operations.

THURSDAY.—10 A.M., Major Operations.

FRIDAY.—10 A.M., Gynæcological Lecture: Pelvic Infection. 11 A.M., Examination of Patients and Minor Operations. 4 P.M., Class in Gynæcological Diagnosis.

For further particulars of the above Lectures, &c., see Advertisement Pages.

A DIARY OF CONGRESSES.

THE following Congresses, Conferences, and Exhibitions are announced for 1913:—

April 26th-Nov. 5th (Ghent).—International Exhibition.

May 14th-17th (Halle a-S.).—Fifteenth Meeting of the German Gynæcological Society.

,, 15th-18th (Paris).—Twenty-first Annual Congress of the Royal Institute of Public Health.

May-October (Leipzig).—First International Building Exhibition.

,, ,, (London, Crystal Palace).—Anglo-German Exhibition.

June 16th and 17th (Minneapolis).—Fifteenth Annual Meeting of the American Proctologic Society.

,, 17th-20th (Minneapolis).—American Medical Association.

,, 24th-27th (London, Ontario).—Canadian Medical Association.

June 30th and July 1st (London, Guildhall).—Conference on Diet, Cookery, and Hygiene in Elementary Schools and Institutions.
July 7th–12th (Exeter).—Twenty-eighth Congress of the Royal Sanitary Institute.
,, 16th–18th (Oxford, Keble College).—Oxford Ophthalmological Congress.
,, 21st–24th (London).—British Pharmaceutical Conference.
,, 22nd–25th (Brighton).—Eighty-first Annual Meeting of the British Medical Association.
Aug. 1st–3rd (Ghent).—Congress against the Adulteration and Deterioration of Foodstuffs.
,, 1st–5th (Brussels).—Third International Conference on Cancer.
,, 3rd–8th (London).—Sixth International Dental Congress.
,, 4th and 5th (London, Caxton Hall).—English-speaking Conference on Infant Mortality.
,, 6th–12th.—(London).—Seventeenth International Congress of Medicine.
,, 20th–26th (Ghent).—Third International Congress of Neurology and Psychiatry.
,, 25th–30th (Buffalo).—Fourth International Congress of School Hygiene.
Sept. 2nd–6th (Groningen).—International Physiological Congress.
,, 9th–13th (Vienna).—Second International Congress of Life Saving and Prevention of Accidents.
,, 10th–17th (Birmingham).—British Association.
,, 21st–26th (Vienna).—Eighty-fifth Meeting of German Natural Philosophers and Physicians.
,, 22nd–28th (Milan).—Fourteenth International Anti-alcoholic Congress.
(London).—Historical Medical Exhibition. (Organised by Mr. Henry S. Wellcome.)
(London, Earl's Court).—Imperial Services Exhibition.
(Chicago).—Congress of the International Association of Refrigeration.
(Washington).—Congress of American Physicians and Surgeons.

In 1914:—
May 1st–Nov. 1st (Lyons).—International Town Life Exhibition.
Aug. 10th–15th (St. Petersburg).—Twelfth International Congress of Ophthalmology.
(London).—Anglo-American Exhibition.
(Vienna).—Third International Congress for Professional Diseases.
(Auckland, N.Z.).—Australasian Medical Congress.
(St. Petersburg).—Third Mendeléeff Congress of Pure and Applied Chemistry and Physics.
(Washington, D.C.).—International Congress of Americanists.
(London).—International Dental Congress.
(Paris).—Fourth International Medical Congress on Industrial Accidents.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—MESSRS. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, May 7th, 1913.

Date.		Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
May	1	29·92	W.	...	106	61	48	48	50	Cloudy
,,	2	29·93	S.W.	...	102	62	44	45	47	Fine
,,	3	29·75	S.W.	...	113	58	45	48	52	Fine
,,	4	29·34	S.E.	0·32	80	52	44	47	48	Overcast
,,	5	29·64	N.E.	0·28	95	60	44	50	50	Cloudy
,,	6	29·62	S.E.	...	103	59	48	49	51	Cloudy
,,	7	29·68	S.W.	0·05	106	57	40	46	49	Cloudy

The following journals, magazines, &c., have been received:—China Medical Journal, Journal of Clinical Research, Proceedings of the Royal Society of Medicine, Polyclinic, Edinburgh Medical Journal, Journal of State Medicine, La Clinique Infantile, South African Record, Annales de Gynécologie et d'Obstétrique, American Journal of Orthopedic Surgery, Medico-Surgical Journal of the Tropics, La Clinique Ophthalmologique, Dominion Medical Monthly, St. Bartholomew's Hospital Journal, Therapeutic Gazette, Ophthalmology, Detroit Medical Journal, Asylum News, British Journal of Children's Diseases, Journal of Laryngology, Rhinology, and Otology, Journal of Hygiene, School Hygiene, Public Health, Nordiskt Medicinskt Arkiv, Public Health.

Communications, Letters, &c., have been received from—

A.—Ancoats Hospital, Manchester, Secretary of; Messrs. J. Alderson and Co., Halifax; Ashbrook Hall, St. Leonards-on-Sea; Army and Navy Male Nurses' Co-operation, Lond., Secretary of; Mr. E. Arnold, Lond.; "A Civil Surgeon"; Mr. T. Stewart Adair, Kirkburton; American Medical Association, Chicago, Secretary of; Dr. W. Broughton Alcock, Paris.

B.—Mr. S. N. Babington, Tilehurst; Bristol General Hospital, Secretary of; Bristol University, Registrar of; Messrs. Baillière, Tindall, and Cox, Lond.; British Diamalt Co., Lond.; Messrs. Bennett Bros., Salisbury; Bolingbroke Hospital, Lond., Secretary of; Beckett Hospital, Barnsley, Hon. Secretary of; Messrs. Bowen and McKechnie, Lond.; Mr. H. W. Bayly, Lond.; Dr. J. Blumfeld, Lond.; Mr. Edmund C. Bevers, Oxford;

[*Acknowledgments continued on next page.*

Dr. W. P. S. Branson, Lond.; Messrs. Burroughs, Wellcome, and Co., Lond.; Dr. Barnardo's Homes, Lond., General Secretary of; Dr. A. Bernard, Liverpool; Sir Anthony A. Bowlby, Lond.; Mr. Hugh Breyer, Lond.; British Fire Prevention Committee, Lond., General Hon. Secretary of; British Hospitals Association, Lond.

C.—Mr. W. F. Cholmeley, Wolverhampton; County Asylum, Prestwich, Medical Superintendent of; Dr. J. C. Crawford, Keighley; Cheltenham General Hospital, Secretary of; C. H.; Messrs. J. and A. Churchill, Lond.; Messrs. Cassell and Co., Lond.; Mr. B. G. Chatterjee, Ghatal; Cossham Memorial Hospital, Bristol, Secretary of; Mr. H. A. Collins, Croydon; Commons and Footpaths Preservation Society, Lond., Committee of; Chesterfield and North Derbyshire Hospital, Secretary of; Chelsea Hospital for Women, Lond., Secretary of; Mr. F. Cooke, Leicester; Dr. W. H. Cheetham, Guiseley; Dr. H. Warren Crowe, Yelverton; Dr. H. P. Cholmeley, Westerham; Dr. W. R. Clayton-Heslop, Lond.; Cancer Hospital Research Institution, Lond., Director of.

D.—Messrs. W. Dawson and Sons, Lond.; Professor S. Delépine, Manchester; Mr. C. Duborgel, Divonne-les-Bains; Duff House, Banff, Secretary of; Derbyshire Royal Infirmary, Derby, Secretary of; Dr. Binnie Dunlop, Lond.; Durham University Medical Graduates' Association, Lond., President and Council of; Divorce Law Reform Union, Lond., Organising Secretary of; Mr. R. Donald, Lond.; Dr. Thomas W. Dewar, Dunblane; Mr. Frederick Dixon, Lond.

E.—Dr. W. Engelmann, Bad Kreuznach; Mr. W. Evans, jun., Lond.; Encyclopædia Britannica Co., Lond.; Dr. F. W. Edridge-Green, Lond.

F.—Mr. H. A. T. Fairbank, Lond.; Messrs. Fannin and Co., Dublin; Messrs. Fairchild Bros. and Foster, Lond.; F. H.

G.—Dr. W. Gilmour, Hamilton; Messrs. Grantham and Co., Reading; General Life Assurance Co., Lond.; General Medical Council, Lond., Registrar of; General Infirmary, Leeds, Secretary of; Mr. E. A. Gardiner, Berkhamsted.

H.—Messrs. Hampton and Sons, Lond.; Mr. C. F. Higham, Lond.; H. P.; Dr. H. R. Harrower, Lond.; Dr. F. de Havilland Hall, Lond.; Holborn Surgical Instrument Co., Lond.; Dr. E. L. Hunt, Lond.; Mr. C. A. Hoefticke, Lond.; Hove, Medical Officer of Health of; Dr. Alexander Haig, Lond.; Professor Leonard Hill, Loughton; Dr. Bernard Hudson, Davos-Platz; Mr. J. H. Honan, Bad Nauheim; Professor W. D. Halliburton, Lond.

I.—Imperial Motor Transport Conference, Lond., Hon. Secretary of; Dr. A. C. Inman, Lond.

J.—Dr. Alfred C. Jordan, Lond.; Jessop Hospital for Women, Sheffield, Secretary of; Mr. W. Judd, Lond.; Professor Robert Jardine, Glasgow.

K.—Messrs. R. A. Knight and Co., Lond.; Messrs. Kutnow and Co., Lond.; Mr. Frank Kidd, Lond.; Colonel W. G. King, I.M.S. (retired), Hatch End.

L.—Liverpool Eye and Ear Infirmary, Secretary of; Loughborough and District General Hospital and Dispensary, Secretary of; Mr. H. K. Lewis, Lond.; Messrs. E. and S. Livingstone, Edinburgh; Lady Margaret Hospital, Bromley, Secretary of; London Press Exchange, Lond.; London Hospital Medical College, Dean of; Dr. Latham, Lond.; Liverpool Guardians, Clerk to the; Local Government Board, Lond., Medical Officer to the; London, City of, Medical Officer of Health of; Leeds and West Riding Medico Chirurgical Society, Secretary of; Mr. Charles Lane, Lond.; Rev. Harry Lansdell, D.D., Lond.; Mr. O. Liebniz, Lond.

M.—Dr. F. G. Miranda, Paris; Messrs. May, Roberts, and Co., Lond.; Messrs. F. Mundy, Gilbert, and Co., Birmingham; Mental Hospital, Woodilee, Medical Superintendent of; Dr. T. S. Macaulay, Seremban, F.M.S.; Messrs. Mather and Crowther, Lond.; Captain A. A. C. McNeill, I.M.S., Mardan; Dr. McDougall, Cannes; Mr. R. Mosse, Berlin; Medical Hall Co., Broken Hill; Maltine Manufacturing Co., Lond.; Mr. F. F. Middleweek, Burley; Staff-Surgeon J. Martin, R.N., Alverstoke; Mr. E. J. Moynihan, Johannesburg; Dr. Reginald Morton, Lond.; Mr. A. Manuel, Lond.; Mr. A. Maude, Westerham; Dr. J. C. McWalter, Dublin; Mr. J. Morgan, Pontnewynydd; Dr. Heinrich Meier, Munich; Medical Society of London, President and Council of.

N.—Mr. H. Needes, Lond.; North Staffordshire Infirmary, Hartshill, Secretary of; National Health Insurance Commissioners, Lond., Secretary to; Nottingham Medico-Chirurgical Society, Secretary of; National Anti-Vaccination League, Lond.; National Medical Guild, Lond.

O.—Sir Thomas Oliver, Newcastle-on-Tyne; Lieutenant-Colonel W. Moyle O'Connor, R.A.M.C., Lond.; Dr. R. Foster Owen, Lond.; Mr. Sam Osborn, Datchet.

P.—Messrs. Peacock and Hadley, Lond.; Poplar Dispensary, Lond., Chairman of; Prudential Assurance Co., Lond., Manager of; Mr. W. T. Postlethwaite, Manchester; Messrs. Parke, Davis, and Co., Lond.; Captain G. S. Parkinson, R.A.M.C., Pretoria; The Philmar Co., St. Louis, U.S.A.; Presbyterian Hospital, New York, Secretary of; Major T. P. Potter, Kingston; Poole, Medical Officer of Health of; Mr. Stephen Paget, Lond.; Dr. A. R. G. Pocock, Beaconsfield.

Q.—Queen's Hospital, Birmingham; Secretary of; Mr. J. E. St. George Queely, Dunkwa.

R.—Messrs. Reynolds and Branson, Leeds; *Ross Gazette*, Ross-on-Wye, Manager of; Royal Portsmouth Hospital, Secretary of; Royal South Hants and Southampton Hospital, Secretary of; Messrs. Rosenberg and Sellier, Turin; Rotherham Hospital and Dispensary, Secretary of; Rochdale Infirmary, Secretary of; *Revue Générale d'Ophthalmologie*, Lyons, Editor of; Mr. J. F. Richards, Seven Kings; Dr. W. E. Robinson, Lond.; Royal Institution of Great Britain, Lond.; Secretary of; Royal Society of Medicine, Lond., Secretary of; Royal Free Hospital, Lond., Secretary of; Royal Society, Lond., Assistant Secretary of; Royal Academy of Medicine in Ireland, Dublin; Research Defence Society, Lond., Hon. Secretary of; Mr. W. Roy, Glasgow; Dr. S. B. Radley, Lond.; Dr. H. R. Riddle, Lond.

S.—"Science Reviews," Lond.; St. Peter's Hospital, Lond., Secretary of; Mr. Samuel, Beckenham; Sheffield Corporation, Clerk to the; Messrs. R. Sumner and Co., Liverpool; Stockton and Thornaby Hospital, Secretary of; Dr. O. Schnitter, Greylingstad; Captain A. D. Stirling, R.A.M.C., Khartoum; Scarborough Hospital and Dispensary, Secretary of; Professor W. Stirling, Manchester; Mr. J. S. Kellett Smith, Lond.; Dr. T. Claye Shaw, Lond.; Dr. E. I. Spriggs, Banff; Seventeenth International Congress of Medicine, Lond., General Secretary of; Dr. W. Fletcher Shaw, Manchester; Mr. Erwin F. Smith, Washington; Society of Apothecaries, Lond., Master and Wardens of; Mr. J. Edward Squire, Lond.

T.—Tenbury Advertising Co., Tenbury, Secretary of; Mr. W. Trotter, Lond.; Miss H. C. Thorowgood, Bognor; Mr. G. Lestock Thornton, Exmouth; Dr. W. Bezly Thorne, Lond.

U.—University of London, Secretary of.

V.—Messrs. J. W. Vickers and Co., Lond.

W.—Messrs. F. Williams and Co., Lond.; Mr. J. W. Thomson Walker, Lond.; Messrs. Wills, Lond.; Western General Dispensary, Lond., Hon. Secretary of; Wolverhampton and Staffordshire General Hospital, Secretary of; Messrs. A. Wander, Lond.; Worcestershire Asylum, Bromsgrove, Medical Superintendent of; Whiting, Ltd., Lond.; Dr. J. Wilson, Liverpool; Woodhall Spa Co., Woodhall Spa; Mr. G. Watson, Ipswich; Dr. Walter G. Walford, Lond.; Dr. W. Essex Wynter, Lond.; Dr. William Wilson, Manchester; Sir William Whitla, Belfast; Dr. Royal Whitman, New York; Dr. J. T. Ainslie Walker, New York; Dr. A. D. Waller, Lond.; Dr. W. Hale White, Lond.; Dr. Herbert Williamson, Lond.

Y.—Y.M.C.A., Lond., General Secretary of.

Letters, each with enclosure, are also acknowledged from—

A.—Messrs. Allen and Hanburys, Lond.; Aluminium Castings Co., Greenock; Dr. T. C. Askin, Alderton; Antrim County Council, Belfast, Secretary of; Messrs. J. W. Arrowsmith, Bristol; Alnwick Infirmary, Hon. Secretary of; Apollinaris Co., Lond.; Professor H. B. Allen, Melbourne; Anglo-American Pharmaceutical Co., Croydon; Alexandra Therapeutic Institute, Lond., Secretary of.

B.—Blackburn Corporation, Treasurer to the; Belfast Corporation, City Chamberlain to; Messrs. Bedford and Co., Lond.; Birkenhead Guardians, Clerk to the; Mr. S. H. Byam, Lond.; Dr. J. C. Bowie, Bixter; Messrs. Butterworth and Co., Lond.; Mr. G. W. Badgerow, Lond.; "Bon Repos," Lond.; Messrs. G. Barker and Brettell, Birmingham; Dr. F. G. Bushnell, Woodford Bridge; Bellary, India, District Medical and Sanitary Officer; Birkenhead Union, Clerk to the; Mr. F. O. Baird, Hove.

C.—Mr. J. S. Crocket, Bridge of Weir; Mr. J. R. Crease, South Shields; Cairo School of Medicine, Director of; Messrs. Corbyn, Stacey, and Co., Lond.; Chelsea Guardians, Lond., Clerk to the; Dr. E. H. Colbeck, Lond.; Messrs. Constable and Co., Lond., Messrs. Cutting and Underwood, Lond.; Cumberland Infirmary, Carlisle, Secretary of; County Asylum, Whittingham, Treasurer to the; Croydon Mental Hospital, Treasurer to the; Dr. T. G. Champion, Bournemouth; Dr. C. W. Cunnington, Lond.; Dr. A. M. Caverhill, Jedburgh; Messrs. Clay, Paget, and Co., Lond.

D.—Devon and Cornwall Sanatorium, Didsworth, Secretary of; Messrs. G. T. De Fraine and Co., Aylesbury; Denbighshire Infirmary, Denbigh, Secretary of; Dairymple House, Rickmansworth, Medical Superintendent of; Dr. W. Donaldson, Flotta; Dr. J. W. Duffus, Port Elizabeth; Messrs. Driver, Jonas, and Co. Lond.; Dr. Delbaye, Antwerp.

F.—Fellows Co., New York; Mr. P. J. Freyer, Lond.; F. B.

G.—Messrs. Gale and Co., Lond.; Mr. H. Bellamy Gardner, Lond.; Gordon Hospital, Lond., Secretary of; Galen Manufacturing Co., Lond.; G. T.; Glasgow Parish Council, Clerk to the; Dr. S. Gill, Formby; G. B.; Mr. P. H. Groom, Cambridge; Messrs. Guyot, Guenin, and Son, Lond.; G. D. S.

H.—Mr. J. Hart, Lond.; Dr. G. M. Harston, Hong-Kong; Hulme Dispensary, Manchester, Secretary of; H. J.

I.—Miss E. R. Inge, Hayling Island.

J.—J. L.

K.—Professor Keith, Lond.; Kent and Canterbury Hospital, Secretary of; Major K. V. Kukday, I.M.S., Thana; Messrs. C. Knight and Co., Lond.

L.—Professor Leith, Birmingham; Dr. A. G. K. Ledger, Coppull; Lister Institute of Preventive Medicine, Elstree, Secretary of; Leith Hospital, Lady Superintendent of; Leeds Education Committee, Secretary of; Dr. D. Lawson, Banchory; Mr. T. S. Logan, Aylesbury; "Locum," Pateley Bridge.

M.—Manchester Corporation, Treasurer to the; Colonel Marshall, Thames Ditton; Mr. J. E. May, Lond.; Messrs. Methuen and Co., Lond.; Mr. C. F. Myers-Wood, Lond.; Mr. J. Maud, Bournemouth; Macclesfield General Infirmary, Secretary of; Messrs. F. G. Moore and Co., Lond.

N.—Messrs. J. Nisbet and Co., Lond.; Miss C. Newman, Cork; National Provident Institution, Secretary of; Northampton Corporation, Accountant to the.

P.—Mr. F. H. Pickin, Lond.; Rev. L. Parry, Hemingford Grey; Dr. C. H. Penny, Hadley Wood; Plympton House, Plympton, Medical Superintendent of; Pearson's Antiseptic Co., Lond.

R.—Reuter's Telegram Co., Lond., Secretary of; R. J.; Messrs. Robinson and Sons, Chesterfield; Messrs. Ringwood and Inge, Hayling Island.

S.—*Scientific Press*, Lond., Secretary of; St. Bartholomew's Hospital, Rochester, Secretary of; Mr. R. H. Jocelyn Swan, Lond.; Stretton House, Church Stretton, Medical Superintendent of; Messrs. Smith and Son, Lond.; Dr. St. Clair B. Shadwell, Lond.; Stockport Union, Clerk of; Messrs. G. Street and Co., Lond.; Mr. C. Stonham, Lond.; Staff-Surgeon A. D. Spalding, R.N., Lamlash; Miss E. Smith, Lond.; Messrs. Spiers and Pond, Lond.; St. Andrew's Hospital, Lond., Secretary of; Scheff House, Cobham, Secretary of.

T.—Mr. H. Thomas, Coventry; Dr. J. B. Thomas, Pontycymmer; Mr. P. Templeton, Brighton; Messrs. Thacker and Co., Lond.; Dr. H. T. Thompson, Lond.; Dr. F. R. Tylecote, Manchester; T. P.

V.—Messrs. Van Houten, Lond.

W.—Mr. R. Watson, Lond.; Messrs. Willing Lond.; Worcestershire Newspapers and General Printing Co., Worcester, Manager of; Mrs. Winslow-Phillips, Torquay; West Suffolk General Hospital, Bury St. Edmunds, Secretary of; Messrs. Widenmann, Broicher, and Co., Lond.